

NPS-54-88-018

# NAVAL POSTGRADUATE SCHOOL

## Monterey, California

AD-A209 349

**S** DTIC  
ELECTE  
JUN 27 1989  
**D** *CS* **D**



**1987 U.S. ARMY NURSE MEMBERSHIP,  
ACCESSION AND LOSS PROFILES:  
VOLUME I, RESERVES**

George W. Thomas  
Kathryn Kocher  
Thomas P. Moore  
Benjamin J. Roberts

December 1988

Approved for public release; distribution unlimited.

Prepared for:

U S Army Recruiting Command  
Program Analysis and Evaluation Directorate  
Research and Studies Division  
Fort Sheridan, Illinois 60037-6000

89 6 26 045

NAVAL POSTGRADUATE SCHOOL  
Monterey, California

RADM. R. C. Austin  
Superintendent

Harrison Shull  
Provost

The research summarized herein was sponsored by the U S Army Recruiting Command Program Analysis and Evaluation Directorate.

Reproduction of all or part of this report is authorized.

This report was prepared by:

George W. Thomas  
George W. Thomas  
Associate Professor

Thomas P. Moore  
Thomas P. Moore  
Assistant Professor

Benjamin J. Roberts  
Benjamin J. Roberts  
Adjunct Professor  
Department of Administrative Sciences

Reviewed by:

David R. Whipple  
David R. Whipple, Chairman  
Department of Administrative Sciences

Released by:

K. T. Marshall  
Kneale T. Marshall  
Dean of Information and Policy Science

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE

## REPORT DOCUMENTATION PAGE

1a REPORT SECURITY CLASSIFICATION Unclassified			1b RESTRICTIVE MARKINGS	
2a SECURITY CLASSIFICATION AUTHORITY			3 DISTRIBUTION AVAILABILITY OF REPORT Approved for public release; distribution is unlimited	
2b DECLASSIFICATION DOWNGRADING SCHEDULE				
4 PERFORMING ORGANIZATION REPORT NUMBER(S) NPS-54-88-018			5 MONITORING ORGANIZATION REPORT NUMBER(S)	
6a NAME OF PERFORMING ORGANIZATION Naval Postgraduate School	6b OFFICE SYMBOL (If applicable) 54	7a NAME OF MONITORING ORGANIZATION U S. Army Recruiting Command, Program Analysis and Evaluation Directorate		
6c ADDRESS (City, State, and ZIP Code) Monterey, CA 93943-5000		7b ADDRESS (City, State, and ZIP Code) HQUSAREC PAE-MM, Bldg. 48-C Fort Sheridan, IL 60037-6000 Attn: LTC R. Moore		
8a NAME OF FUNDING SPONSORING ORGANIZATION U S Army Recruiting Command (same as 7a)	8b OFFICE SYMBOL (If applicable)	9 PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER MIPR-87-64		
8c ADDRESS (City, State, and ZIP Code) USAR PAE-MM, Bldg. 48-C Ft. Sheridan, IL 60037-6000 Attn: LTC R. Moore		10 SOURCE OF FUNDING NUMBERS		
		PROGRAM ELEMENT NO	PROJECT NO	TASK NO
		WORK UNIT ACCESSION NO		
11. TITLE (Include Security Classification) 1987 U S ARMY NURSE MEMBERSHIP, ACCESSION AND LOSS PROFILES: VOLUME I, RESERVES      Unclassified				
12. PERSONAL AUTHOR(S) Thomas, George W., Kocher, Kathryn, Moore, Thomas P. and Roberts, Benjamin J.				
13a TYPE OF REPORT Final Report	13b TIME COVERED FROM _____ TO _____	14 DATE OF REPORT (Year, Month, Day) December 1988	15 PAGE COUNT 91	
16 SUPPLEMENTARY NOTATION				
17 COSATI CODES			18 SUBJECT TERMS (Continue on reverse if necessary and identify by block number)	
FIELD	GROUP	SUB-GROUP	Army nursing; nurse shortage; nurse recruitment; nurse accessions; nurse losses; characteristics of Reserve nurses.	
19 ABSTRACT (Continue on reverse if necessary and identify by block number)				
<p>The purpose of this report is to provide profiles of Army Reserve nurses to aid in developing strategies and policies for recruiting, managing, and retaining these essential personnel in the face of a national nurse shortage. Data from DMDC personnel files were used to describe USAR and ARNG nurse officers as of September 30, 1987 and transaction information was used to identify those who entered and those who left these Reserve components in FY 1987. Profiled characteristics include: age, gender, marital status, number of dependents, race-ethnic group, highest educational level, home of record state, rank, source of commission, unit of assignment state, training category, military education, and nursing specialty. Comparison of accession and loss data with membership information indicates possible trends in gender, marital status, race-ethnic distribution, and geographic origin and highlights differences and similarities between the two components. <i>Keywords:</i></p>				
20 DISTRIBUTION AVAILABILITY OF ABSTRACT <input checked="" type="checkbox"/> UNCLASSIFIED UNLIMITED <input type="checkbox"/> SAME AS RPT <input type="checkbox"/> DTIC USERS			21 ABSTRACT SECURITY CLASSIFICATION Unclassified	
22a NAME OF RESPONSIBLE INDIVIDUAL George W. Thomas, Assoc. Professor, Code 54Te		22b TELEPHONE (Include Area Code) (408) 646-2741	22c OFFICE SYMBOL 54Te	

# 1987 U.S. ARMY NURSE MEMBERSHIP, ACCESSION AND LOSS PROFILES: VOLUME I, RESERVES

BY

George W. Thomas  
Kathryn Kocher  
Thomas P. Moore  
Benjamin J. Roberts



DECEMBER 1988

Accession For	
NTIS	CRA&I <input checked="" type="checkbox"/>
DTIC	TAB <input type="checkbox"/>
Unannounced <input type="checkbox"/>	
Justification	
By	
Distribution /	
Availability Codes	
Dist	Avail and/or Special
A-1	

PREPARED BY

DEPARTMENT OF ADMINISTRATIVE SCIENCES  
NAVAL POSTGRADUATE SCHOOL  
MONTEREY, CA 93943-5000

FOR

U S ARMY RECRUITING COMMAND  
PROGRAM ANALYSIS AND EVALUATION DIRECTORATE  
RESEARCH AND STUDIES DIVISION  
FT. SHERIDAN, IL 60037-6000

SUBMITTED IN PARTIAL FULFILLMENT OF MIPR No. 87-64

APPROVED FOR PUBLIC RELEASE; DISTRIBUTION UNLIMITED

# TABLE OF CONTENTS

	<u>Page</u>
Table of Contents.....	ii
List of Tables.....	iv
List of Figures.....	v
 I. INTRODUCTION AND BACKGROUND.....	 1
A. Introduction.....	1
B. Background.....	2
 II. DATA AND METHODOLOGY.....	 16
A. Goals, Approach, and Limitations of the Study.....	16
B. Description of the DMDC Data Sets.....	18
 III. FY87 PROFILES OF NURSE MEMBERS OF THE USAR AND THE ARNG.....	 21
A. Age.....	21
B. Gender.....	22
C. Marital Status.....	22
D. Number of Dependents.....	27
E. Race-Ethnic Status.....	27
F. Highest Education Level.....	29
G. Home of Record.....	31
H. Rank.....	31
I. Source of Commission.....	32
J. Geographic Distribution.....	34
K. Training Category.....	34
L. Military Education.....	36
M. Retirement Points.....	39
N. Nursing Specialty.....	41
 IV. PROFILES OF USAR AND ARNG NURSE ACCESSIONS AND LOSSES IN FY97.....	 43
A. Age.....	43
B. Gender.....	46
C. Marital Status.....	49
D. Number of Dependents.....	49
E. Race-Ethnic Status.....	52
F. Highest Education Level.....	55
G. Home of Record.....	58
H. Rank.....	61
I. Source of Commission.....	61
J. Geographic Distribution.....	62
K. Training Category.....	65
L. Military Education.....	65
M. Retirement Points.....	66
N. Nursing Specialty.....	66
 V. SUMMARY AND CONCLUSIONS.....	 70
A. Comparison of USAR and ARNG Membership, Accessions, and Losses.	70
B. Summary Profiles.....	76
C. Recommendations.....	78

Table of Contents, Continued

	<u>Page</u>
LIST OF REFERENCES.....	80
DISTRIBUTION LIST	

# LIST OF TABLES

	<u>Page</u>
TABLE 1	FY87 DMDC Nurse Reserve Membership File..... 18
TABLE 2	FY87 DMDC Nurse Reserve Membership File (Prior Active Duty).... 19
TABLE 3	FY87 DMDC Nurse Reserve Accessions File..... 19
TABLE 4	FY87 DMDC Nurse Reserve Losses File..... 20
TABLE 5	Age, USAR/ARNG and Civilian Nurses, 9/30/87..... 22
TABLE 6	Gender, USAR/ARNG and Civilian Nurses, 9/30/87..... 24
TABLE 7	Marital Status, USAR/ARNG and Civilian Nurses, 9/30/87..... 24
TABLE 8	Number of Dependents, not Including Member, USAR/ARNG Nurses, 9/30/87..... 24
TABLE 9	Race-Ethnic Group, USAR/ARNG and Civilian Nurses, 9/30/87..... 29
TABLE 10	Highest Educational Level USAR/ARNG and Civilian Nurses, 9/30/87..... 31
TABLE 11	Home of Record by Recruiting Region, USAR/ARNG Nurses, 9/30/87. 32
TABLE 12	Rank, USAR/ARNG Nurses, 9/30/87..... 32
TABLE 13	Source of Commission, USAR/ARNG Nurses, 9/30/87..... 34
TABLE 14	Unit of Assignment by Recruiting Region, USAR/ARNG Nurses, 9/30/87..... 36
TABLE 15	Highest level of Military Education, USAR/ARNG Nurses, 9/30/87. 39
TABLE 16	Nursing Specialty, USAR/ARNG Nurses, 9/30/87..... 41
TABLE 17	Age, USAR/ARNG Nurse Accessions and Losses, FY 1987..... 46
TABLE 18	Gender, USAR/ARNG Nurse Accessions and Losses, FY 1987..... 46
TABLE 19	Marital Status, USAR/ARNG Nurse Accessions and Losses, FY 1987. 49
TABLE 20	Number of Dependents, not Including member, USAR/ARNG Nurse Accessions and Losses, FY 1987..... 52
TABLE 21	Race-Ethnic Group, USAR/ARNG Nurse Accessions and Losses, FY87. 55
TABLE 22	Highest Education Level, USAR/ARNG Nurse Accessions and Losses, FY 1987..... 55
TABLE 23	Home of Record by Recruiting Region, USAR/ARNG Nurse Access- ions and Losses, FY 1987..... 58
TABLE 24	Rank, USAR/ARNG Nurse Accessions and Losses, FY 1987..... 61
TABLE 25	Source of Commission, USAR/ARNG Nurse Accessions and Losses, FY 1987..... 62
TABLE 26	Region of Unit of Assignment, USAR/ARNG Nurse Accessions and losses, FY 1987..... 62
TABLE 27	Highest Level of Military Education, USAR/ARNG Nurse Accessions and Losses, FY 1987..... 65
TABLE 28	Nursing Specialty, USAR/ARNG Nurse Accessions and Losses, FY 87..... 67

# LIST OF FIGURES

	<u>Page</u>
FIGURE 1 Personnel Flows of Nurses in the Active Army.....	11
FIGURE 2 Personnel Flows of Nurses in the Reserves.....	14
FIGURE 3 Data Elements Selected From the ROCPDS Masters and Transactions Files.....	17
FIGURE 4 Average Age by Rank, USAR Nurses, September 30, 1987.....	23
FIGURE 5 Gender by Rank, USAR Nurses, September 30, 1987.....	25
FIGURE 6 Marital Status by Rank, USAR Nurses, September 30, 1987.....	26
FIGURE 7 Average Number of Dependents by Rank, USAR Nurses, 9/30/87.....	28
FIGURE 8 Race-Ethnic Group by Rank, USAR Nurses, September 30, 1987.....	30
FIGURE 9 Home of Record by Recruiting Region and Rank, USAR Nurses, September 30, 1987.....	33
FIGURE 10 Source of Commission by Rank, USAR Nurses, September 30, 1987..	35
FIGURE 11 Unit of Assignment by Recruiting Region and Rank, USAR Nurses, September 30, 1987.....	37
FIGURE 12 Training Category by Rank, USAR Nurses, September 30, 1987.....	38
FIGURE 13 Highest Level of Military Education by Rank, USAR Nurses, September 30, 1987.....	40
FIGURE 14 Nursing Specialty by Rank, USAR Nurses, September 30, 1987.....	42
FIGURE 15 Average Age by Rank, USAR Nurse Accessions, FY 1987.....	44
FIGURE 16 Average Age by Rank, USAR Nurse Losses, FY 1987.....	45
FIGURE 17 Gender by Rank, USAR Nurse Accessions, FY 1987.....	47
FIGURE 18 Gender by Rank, USAR Nurse Losses, FY 1987.....	48
FIGURE 19 Marital Status by Rank, USAR Nurse Accessions, FY 1987.....	50
FIGURE 20 Marital Status by Rank, USAR Nurse Losses, FY 1987.....	51
FIGURE 21 Average Number of Dependents by Rank, USAR Nurse Accessions, FY 1987.....	53
FIGURE 22 Average Number of Dependents by Rank, USAR Nurse Losses, FY 1987.....	54
FIGURE 23 Race-Ethnic Group by Rank, USAR Nurse Accessions, FY 1987.....	56
FIGURE 24 Race-Ethnic Group by Rank, USAR Nurse Losses, FY 1987.....	57
FIGURE 25 Home of Record by Recruiting Region and Rank, USAR Nurse Accessions, FY 1987.....	59
FIGURE 26 Home of Record by Recruiting Region and Rank, USAR Nurse Losses, FY 1987.....	60
FIGURE 27 Unit of Assignment by Recruiting Region and Rank, USAR Nurse Accessions, FY 1987.....	63
FIGURE 28 Unit of Assignment by Recruiting Region and Rank, USAR Nurse Losses, FY 1987.....	64
FIGURE 29 Nursing Specialty by Rank, USAR Nurse Accessions, FY 1987.....	68
FIGURE 30 Nursing Specialty by Rank, USAR Nurse Losses, FY 1987.....	69



## I. INTRODUCTION AND BACKGROUND

### A. Introduction

Recent manpower trends within the Army Nurse Corps have created grave concern for maintaining adequate staffing levels in the delivery of health care services and the maintenance of medical readiness. In a recent Army Times article, Eisenstadt (1988) describes a now all too typical scenario where the shortage of Army nurses combined with medical care budget cuts will threaten both the availability and quality of medical care. In order to appreciate the contribution of nurses in the Reserve components, it is necessary to understand their role in the context of the delivery of health services as well as in the maintenance of readiness within the total Army force structure.

From a strategic perspective, the abolition of the draft placed greater reliance on a total force concept. This new strategy resulted in greater utilization of Regular, Reserve, and Guard components with hopes of realizing greater cost effectiveness as well as providing a stronger defense posture. A predominant effect of this strategic posture resulted in increased reliance on Reserve forces in providing combat, combat support, and combat services support manpower. A recent report of the Reserve Forces Policy Board (1986) indicated that the Army Reserve and Army National Guard provide approximately 70% of the total Army's combat medical care. Specifically, the Active/Reserve mix of wartime manpower requirements for nurses has been reported to be 33%/67% respectively (Seevers, 1987). These figures thus suggest the criticality of maintaining Reserve nurse manpower levels in meeting both health care and readiness requirements.

Because of the significant roles played by Army National Guard and Army Reserve medical units, they will be needed in the early days of any major

conflict. With increased reliance on the total force strategy, we are likely to see an increased number of missions moved from the Active force to the Reserve components. Already, medical units and individual requirements have been and continue to be added to the Army Reserve and Army National Guard force structure.

Considering this scenario, the most critical issue for maintaining medical readiness is the shortage of qualified personnel in the Reserve forces. Several reports since 1980 have indicated significant shortages with resulting threats to readiness (Government Accounting Office, 1981; Fox, 1982; Congressional Testimony, Mayer, 1984; Congressional Testimony, Mittenmeyer, 1984). A recent information paper on the U.S. Army Health Services Command Nurse Staffing Philosophy (1988) shows an actual operating strength shortfall of 379 Army nurse Corps Officers.

The process of maintaining an adequate supply of nursing personnel involves addressing factors that affect both recruitment and retention of qualified individuals. The purpose of this report is to profile USAR nurse membership, accessions and losses. These profiles may provide useful data for developing new strategies and policies, thus aiding in the recruitment, management, and retention of nursing personnel. This report is one of a series of reports that can be used by Army Nurse Corps managers to understand better the dynamics of the nurse population they manage, and thereby be better prepared to meet the need for nurses in the Army Reserve.

#### **A. Background**

##### **1. Nationwide Nursing Shortage.**

The problems faced by the Army Nurse Corps in recruiting and retaining qualified nursing personnel are similar to those in the civilian sector nationwide. Health care organizations across the country are in substantial

agreement on the seriousness of the current nursing shortage (American Organization of Nurse Executives, 1986, 1987; American Hospital Association, 1987; American Health Care Association, 1987; U.S. Department of Health and Human Services, 1986; American Nurses Association, 1987).

Current statistics published by the American Nurses' Association (1988) reveal that vacant budgeted nursing positions in hospitals have more than doubled, from 6.3% to 13.6%, between December 1985 and December 1986. With nearly 700,000 registered nurses (RNs) employed in hospitals, the 13.6% vacancy rate represents a shortage of more than 95,000 RNs. In mid-1987, an American Hospital Association survey (1987) found that 54.3% of hospitals were experiencing a "moderate" or "severe" nursing shortage. In a 1987 survey of nursing homes conducted by the American Health Care Association, 51% of respondents reported an average of three months or longer to recruit an RN. Also, 54% indicated that they were experiencing a "moderate" or "severe" nursing shortage.

Federal estimates published in a report of the U.S. Department of Health and Human Services (1986), indicate that the supply of bachelor's degree-prepared RNs will fall short of the demand by about 390,000 by 1990 and by about 578,000 by the year 2000. In addition, the report indicates that the demand for RNs with masters' degrees and doctorates is estimated to be three times the supply available through the year 2000. Thus, the gravity of the national situation has caused many organizations employing nursing personnel to seek more strategic solutions, often transcending their local conditions.

The seriousness of these issues resulted in the establishment of a 25-member advisory panel by the Secretary of the Department of Health and Human Services in 1987 to examine recent reports of widespread shortages of registered

nurses. The commission is composed of members representing several institutions and national organizations concerned with nursing issues. It includes a member representing tri-service military nursing issues, whereby the Army Nurse Corps is represented. The Commission's charge is to assess the nature and extent of these shortages, to identify practices that have proven successful in recruiting and retaining RNs, and to recommend actions that can be taken by both private and public sectors to address shortage-related issues.

The efforts of the Secretary's Commission on Nursing represent one of the most comprehensive attempts at gaining an understanding of the shortage of nursing personnel in this country. Its interim report (July, 1988) presented an assessment of the nature and extent of the nursing shortage:

"The Commission believes that the current shortage of RNs is primarily the result of an increase in demand as opposed to a contraction in supply. Although RN supply continues to grow, the number of new RN graduates has declined, and there are strong indications that RN supply has not kept pace with increased demand. There is evidence of increased demand for RNs in all employment sectors. Especially noteworthy are the strong indications that the shortage of hospital RNs is demand-driven." (Commission on Nursing, Interim Report 1988).

The report includes a discussion of factors on both the supply side and the demand side that interact to create difficulties in recruitment and retention of nursing personnel for all organizations. Specifically, on the demand side, contributing factors tend to center on issues of nursing personnel mix in institutions and consumer demand for health services. There has been a long-term trend in hospitals to use more RNs in comparison to other nursing-related personnel such as licensed practical nurses and nurses aides (American Hospital Association, 1987). This is partially the result of increasingly complex care and the use of more sophisticated equipment to care for a patient population with greater nursing care requirements. However, it is more likely

the result of the existence of relatively low wages for RN's as compared to non-nursing personnel.

In addition to substituting RNs for lower-wage nursing personnel, Aiken and Millinix (1987) report that cutbacks in support staff and reductions in the number of pharmacists, physical and respiratory therapists, laboratory technicians, as well as social workers have resulted in increases in the number of RNs performing both non-clinical nursing tasks and non-nursing tasks. The American Nurses' Association (1988) reported that hospitals across the nation have gone from using 50 nurses per 100 patients in 1972 to 91 nurses per 100 patients in 1986. Although hospitals employ about two-thirds of all registered nurses, the demand for nurses outside of the hospital, in skilled nursing facilities, home care agencies, HMOs, and industry adds to the overall need for RNs.

Two underlying factors that have significantly affected the civilian demand are the AIDS epidemic and wage rates. According to the Commission report (1988), when AIDS patients enter the health care system, they are likely to receive medical care through inpatient hospital stays, since long-term care facilities outside of the hospital are not well developed at this time. According to Fox (1988), both anecdotal and limited quantitative data indicate that AIDS patients require exceptionally intensive nursing services.

The wage issue has implications for both demand and supply. According to Buerhaus (1987), low average wage rates, which have declined relative to comparison groups such as teachers, have created significant problems in both recruitment and retention of nurses. In addition, wage compression, the fact that the difference between average starting salaries and average maximum salaries of nurses is relatively small, results in depressed career earnings.

According to Bureau of Labor Statistics (1987), the average maximum salary is only \$7,000 higher than the average starting salary and is reached in a relatively short time compared to other professions. Thus, on the demand side, these wage factors, especially wage compression, result in nurses being a bargain for hospital administrators in the sense that, with "expanded" roles, there may be a greater propensity to substitute RNs for other health care personnel, including less skilled, non-clinical workers.

From the perspective of supply conditions affecting the nurse shortage, several factors come into play in addition to wage issues. The American Nurses' Association (1988) reports that with more professional options currently available, women are entering fields of study other than nursing. According to the association's statistics, enrollments in RN programs peaked in 1983 at 254,723 and had fallen to 193,712 by 1986. Between 1983 and 1987, the proportion of women who chose nursing as a career fell by more than 50%, from 8.3% to 4.0%. While only 3% of all registered nurses are male (U.S. Department of Health and Human Services, June 1986), only 0.2% of male college freshmen planned a career in nursing between 1983 and 1987 according to the association.

Taeuber and Validisera (1986) indicate that, while the majority of women are still employed in traditional "female" occupations, there has been an increase in the number of women employed in traditionally "male" dominated professions. Studies by Astin et al.(1987) and Green (1987) reveal that the national economy influences student career choices. That is, during recessionary periods, students tend to select undergraduate programs that represent high employment possibilities, such as nursing. On the other hand, during non-recessionary periods, choices are more representative of careers having a greater potential for increased pay. According to Green (1988), in 1987 the ratio of

aspiring freshman nurses to aspiring women physicians was 6.8 to 10; and, by 1990, it is estimated that American colleges are likely to award more MD than BSN degrees. This finding is further exacerbated by noting that because of low birth rates between 1965 and 1976, the number of 18 year-olds enrolling in higher education is projected to continue to decline until 1994 (Fullerton, 1987). Other supply-side factors discussed in the interim report of the Commission on Nursing include retention problems, the effect of the AIDS epidemic, and the professional image of nurses.

In past years, maintaining an adequate supply of required nursing personnel was more easily controlled through recruitment or retention efforts, or both. Given a labor force participation rate of nearly 80% for RNs, solving the generic shortage will likely involve looking for new solutions to old problems. Considering the myriad of precipitating factors previously cited, efforts without sufficient strategic vision, employed to solve one organization's shortage, will likely create similar problems for another organization drawing from the same pool of eligibles.

The broad range of job characteristics that impact the motivation and satisfaction of the individual nurse are dependent upon how the professional skills and abilities of nurses are used on the job. Previously cited studies document the fact that, because nurses are sometimes considered "bargains" from a cost perspective relative to other health care practitioners, substitution of work roles frequently occurs, often resulting in nurses performing non-clinical and non-nursing duties. According to data gathered by the Commission on Nursing, hospitals have not increased their use of licensed practical nurses (LPNs) and nurses' aides, nor substituted non-nursing personnel for RNs, given that a large proportion of many nursing positions entail non-clinical work. On the contrary,

according to the American Hospital Association's Annual Survey (1987), hospitals have increased the intensity of RN utilization relative to other staff.

The issue of working conditions is a reflexive problem in that factors such as the RN work schedule, increased patient workloads, and the resultant cumulative effects on personal lives create stressful conditions for nursing personnel as well as creating environmental conditions on the job that are not conducive to recruitment and retention.

Although the purpose of this review is not to enumerate all possible sources of job satisfaction or dissatisfaction for nurses, the importance of the relationship between satisfaction and productivity is evidenced by researchers such as Herzberg et al.(1959) and Hackman and Oldham (1975). Hertzberg (1959) called attention to the functional and dysfunctional potential of certain characteristics associated with work to motivate individuals. Hackman and Oldham (1975) helped identify the contributions of specific core job characteristics in motivating workers. According to their model, meaningfulness, responsibility, and an understanding of the results of work contribute to motivation and job satisfaction. Individuals whose jobs involve high levels of skill variety (utilizing different skills, abilities, and talents), task identity (doing a job from beginning to end with visible outcome), and task significance (importance of the job) experience work as highly meaningful. A high level of autonomy leads to a greater sense of responsibility and accountability. Where feedback is provided, workers develop a useful understanding of their specific roles and functions. Thus, the greater the presence of all five task characteristics in a job, the more likely the job-holder will be highly motivated and experience job satisfaction. With these factors in mind, one might understand how difficult working conditions, along with the impact of working with AIDS patients, have



made the work of nurses increasingly stressful.

A final note on supply-side considerations concerns the image of the profession of nursing. In a recent presentation to the Commission on Nursing, Kalish (1988) discussed how the negative public image of nursing has long been a professional liability. The poor image is considered to be both a contributing factor and a consequence of the current shortage. With widespread discussion within the media of the conditions that many nurses work within, individuals have become discouraged from entering the profession, thus diminishing the results of recruitment and retention efforts.

While not all inclusive, the foregoing discussion points out some of the key factors involved in the unfolding of the current nursing shortage. The loss, accession, and membership profiles of nurses in the Army Reserves and National Guard must be viewed in the context of the general nursing profession. These nurses exist as a subset of the larger set of all nurses and are thus influenced by the same factors that affect civilian nurses. In addition to being military USAR/ARNG nurses, they are civilian sector nurses.

## 2. General Background of the Army Nurse Corps

### a. Sources of Active Army Nurses

Newly commissioned nurses in the Active Army come primarily from two sources: direct commissioning of appropriately qualified recent graduates of nursing schools; and the Reserve Officer Training Corps (ROTC). In both cases, the potential commissionee must be a Registered Nurse and hold a bachelor's degree in nursing. Nearly all of these new commissionees are given Reserve commissions and enter a three year period of initial Active Duty (4 years in the case of nurses who had ROTC scholarships). A portion of the ROTC graduates who have been named Distinguished Military Graduates (DMG) are given Regular Army

commissions as second lieutenants.

Occasionally, the Active Army accepts a nurse from a third source: the U.S. Army Reserve (USAR) or the Army National Guard (ARNG). Such nurses are termed "recalls" because they are being recalled to Active Duty. In the future, recalled Reservists may make up a larger portion of the Active Duty force as they are recruited to cope with forecasted Active Duty nursing shortages.

b. Flow of Nurses on Active Duty

Figure 1 summarizes the flow of nurses in the Active Army as these movements relate to subsequent Reserve service. Nurses who begin Active Duty holding a Reserve commission as a Second Lieutenant go through several stages on their way to a 20 year Active Army career. These four stages are called:

1. Initial Active Duty (IAP)
2. Conditional Voluntary Indefinite (CVI)
3. Voluntary Indefinite (VI)
4. Regular Army (RA)

The period of initial Active Duty lasts for 3-4 years. If the officer takes no action, he or she is automatically discharged from Active Duty at the end of this period, and transfers into the Army Reserves (into one of the Ready Reserve components or the Standby Reserve) or Army National Guard to complete his or her legal service obligation.

Those nurses who wish to continue on Active Duty after completing IAD must apply for conditional voluntary indefinite status. If their application is granted, they may continue on Active Duty until approximately their 7th year. If they wish to remain on Active Duty beyond this time, they must next apply for voluntary indefinite status. Once in this status, they will be automatically considered for Regular Army status at the 2nd promotion board of

**1. Qualification**

(RN; BSN)

**2. Commission**

**Direct Appointment:**  
Reserve Commission

**or**

**ROTC**  
Reserve or Regular Army  
Commission

**3. Initial Active Duty**

(3 to 4 years)

**Reserve Commission:**  
Must apply for Regular  
Army after initial  
service in order to  
remain on Active Duty

**or**

**Regular Army Commission:**  
may continue on Active  
Duty without application

**4. Reserve Service**

**Obligated Volunteer:**  
after initial Active  
Service, may fulfill  
remaining obligation  
by serving in USAR or  
ARNG

**or**

**Nonobligated Volunteer:**  
may choose to serve in  
USAR or ARNG on  
leaving Active Service  
(if less than 20 years  
served)

Note: Movement to civilian status is not shown

**Figure 1**  
**Personnel Flows of Nurses in the Active Army**

their current tour of Active Duty. For most nurses, this means the Major's promotion board. For a nurse with a break in Active Duty, this may mean the Lieutenant Colonel's or Colonel's promotion board.

c. Losses from Active Duty

Officers may depart from any of the four Active Duty categories listed above by a number of means:

1. Expiration of term of initial Active Duty
2. Voluntary resignation
3. Normal retirement
4. Medical retirement
5. Death
6. Discharge for cause

Officers who leave Active Duty for reason 1 or 2 often join the Reserves. However, only those who leave Active Duty with some remaining legal obligation to serve are required to join the Reserves. Retirees are not eligible for Reserve service. Figure 1 shows the approximate number of officers leaving Active Duty and going to the Reserves each year, and also the approximate number of nurses retiring each year. (Rieker, 1988)

d. Sources of Nurses in the Reserves

Both the USAR and ARNG obtain nurses from three sources: direct commissionees, ROTC, and nurses leaving Active Duty. Currently, direct commissionees and ROTC graduates who go directly into the Reserves will actually serve a two or nine week tour of Active Duty for training. This tour of duty is done at Fort Sam Houston in San Antonio, Texas in order to attend the Nurse Officer Basic Course. Most nurse reservists take the two week, Reserves only, version of this course shortly after receiving their commission. However, some Reserve nurses delay taking this course until their second or third year in the Reserves.

e. Flow of Nurses in the Reserves

There are six different categories of Reserve status:

1. USAR troop program unit (TPU) or ARNG unit.
2. Individual Mobilization Augmentee (IMA).
3. Individual Ready Reserve (IRR).
4. Active Guard and Reserve (AGR).
5. Standby Reserve.
6. Retired Reserve.

Figure 2 shows these categories in relation to the flow of nurses in the Reserves. Categories 1 and 2 make up the most active component of the Reserves. Under Federal law, the combination of these two groups is known as the Selected Reserve. The combination of categories 1, 2, and 3 is called the Ready Reserve.

Nurses in category 1 serve in an actual USAR or ARNG medical unit. They perform paid training sessions, called drill periods, (also called military unit training assemblies) for twelve weekends per year, plus a two week tour of Active Duty which is called Annual Training. Nurses in category 2 perform a minimum of two weeks of Annual Training per year. They are assigned to a particular position in an Army TDA unit, and would go to that job in the event of mobilization.

Individual Ready Reserve (IRR) officers do not belong to a Reserve, ARNG or TDA unit. They are unassigned, but in the event of mobilization, would be available to fill positions in the Army Nurse Corps as needed. IRR officers usually perform a two or four week tour of Active Duty each year. (The minimum requirement is a two week Annual Training tour. Many officers in the IRR actively try to obtain four or more weeks of Annual Training in order to have the year qualify towards retirement.) Many of the officers in the IRR still have a legal obligation to serve in the Reserves in some capacity. Many will resign their commissions once they have fulfilled this obligation.

Nurses in the Active Guard and Reserve (AGR) category serve on

### **1. Military Background**

#### **Nonprior Service:**

1. Education, qualification  
(RN; BSN or AA)
2. Reserve Commission  
(Primarily direct appointment)
3. Active Duty Service  
(2 or 9 week course)

**or**

#### **Prior Active Service:**

1. Obligated Volunteer  
(service remaining)
- or
2. Nonobligated Volunteer  
(service completed)

### **2. Reserve Service**

USAR TPU or ARNG Unit  
(weekend drill + annual training)

**or**

Individual Mobilization Augmentee  
(minimum 2 week annual training)

**or**

Individual Ready Reserve  
(minimum 2 week annual training)

**or**

Standby Reserve  
(obligation completed; no drill or training)

**or**

Active Guard/Reserve  
(Active Duty Service in Support of Reserves)

### **3. Retirement**

#### **Reserve Retirement**

After 20+ years  
(must acquire sufficient  
retirement points)

**or**

#### **Active Duty Retirement**

After 20+ years  
(only if Active Guard/  
Reserve)

**Figure 2**  
**Personnel Flows of Nurses in the Reserves**

Active Duty for long, but limited tours of Active Duty. The typical AGR tour lasts 3 or 4 years. AGR Nurse Corps officers perform administrative duties related to the Reserve Nurse Corps, rather than doing actual nursing jobs.

Nurse members of the Standby Reserve have completed their military obligation to serve in the Ready Reserve (TPUs, IMAs and IRRs). Nurses who request transfer into the Standby Reserve are essentially terminating their participation in the Reserves, as Standby Reservists do not perform drills or Annual Training, and can only be called to Active Duty after Congress has declared war, or a national emergency.

Nurses in the Retired Reserve category have successfully completed 20 or more years of satisfactory Reserve service. Movement of nurses between categories 1 - 5 is almost entirely voluntary and requires the concurrence of the Army. Only the AGR category requires a formal application process.

f. Losses of Nurses from the Reserves

There are three places Reserve nurses can go when they leave the Reserves: to civilian status; to retired Reserve status; or into the Active Army. Very few nurses make the last move. The Retired Reserve is an absorbing state, i.e. once a nurse retires, this status is permanent (except perhaps during a war, one requiring the mobilization of even the Retired Reserve).

## II. DATA AND METHODOLOGY

### A. Goals, Approach, and Limitations of the Study

The goal of this research is to examine the characteristics of nurse officers who were members of the Army Reserve or the Army National Guard as of September 30, 1987, and also to identify and describe those nurses who entered and those who left these Reserve components in fiscal year 1987. By understanding characteristics both of the stock (membership) of current nurses and the flow (accessions and losses), Army Nurse Corps managers can better understand the dynamics of the nurse population and be better prepared to meet the need for nurses in the Army Reserve.

The data used to conduct this research were obtained from the Defense Manpower Data Center (DMDC) and were derived from the Army Reserve Components Common Personnel Data System (ROCPDS). Figure 3 lists the data elements selected from the ROCPDS Masters and Transactions files for use in developing USAR and ARNG nurse profiles.

A degree of skepticism about the validity of the characteristics and profiles presented in this study should be maintained. The data are collected in the ROCPDS and come from extremely diverse sources in the Army Reserves. Some data elements were missing from individual records and some fields in these records may contain substantial numbers of errors.

Two specific fields used in the profiles are particularly suspect. Some Reservists with high ranks showed few or no retirement points in their ROCPDS records. In addition, the data element which gives total active federal military service (TAFMS) is estimated from these retirement point data. (Hill, 1988)



### **MILITARY CHARACTERISTICS**

**Service Component (USAR or ARNG)**  
**Total Active Federal Military Service**  
**DOD Primary Occupation Group**  
**DOD Duty Occupation Group**  
**Paygrade**  
**Source of Commission**  
**Years for Retirement**  
**Reserve Training Category**  
**Total Retirement Points**  
**Accession Date**  
**Loss Date (if applicable)**  
**Loss Designator (if applicable)**  
**Transaction Date (for losses and accessions)**  
**State (unit assignment location)**

### **DEMOGRAPHIC CHARACTERISTICS**

**Education Certification**  
**State (home address)**  
**Date of Birth**  
**Age (checked against date of birth)**  
**Race-Ethnic Group**  
**Marital Status**  
**Number of Dependents**  
**Gender**

**Figure 3**

**Data Elements Selected From the RCCPDS  
Masters and Transactions Files**

## B. Description of the DMDC Data Sets

The Defense Manpower Data Center obtains U.S. Army personnel data from the SIDPERS databases at the Total Army Personnel Agency (TAPA) and the Army Reserve Personnel Center (ARPERCEN). Four files which were obtained for nurse officers are described in the sections which follow:

### 1. Reserve Membership File

This file contains information on each member of the U.S. Army Reserve and the U.S. Army National Guard, as of September 30, 1987. Table 1 shows the categories and numbers of nurse officers contained in this file. Profiles were not constructed for Army nurses in the Individual Ready Reserve, the Standby Reserve, the Inactive National Guard, and the Retired Reserve.

TABLE 1

#### FY87 DMDC Nurse Reserve Membership File

<u>Personnel Category</u>	<u>USAR</u>	<u>ARNG</u>
Troop Program Unit Personnel	6,148	885
Active Guard/Reserve	97	21
Individual Mob. Augmentee	112	0
ARNG Military Technicians	<u>0</u>	<u>45</u>
Total	6,357	951

### 2. Reserve Membership File (Prior Active Duty)

This file contains an extract of the Reserve Membership File described above. It includes a record for each of the 685 nurses in the USAR or ARNG (as of September 30, 1988) who was shown in the DMDC Active Duty files as having separated from Active Duty between October 1, 1980 and September 30, 1987. Table 2 shows the categories and numbers of officers contained in this file.

TABLE 2

FY87 DMDC Nurse Reserve Membership File  
(Prior Active Duty)

<u>Personnel Category</u>	<u>USAR</u>	<u>ARNG</u>
Troop Program Unit Personnel	622	29
Active Guard/Reserve	12	2
Individual Mob. Augmentee	18	0
ARNG Military Technicians	<u>0</u>	<u>2</u>
Total	652	33

## 3. Reserve Accessions File

This file contains information on 1,157 nurses who joined the U.S. Army Reserve or the U.S. Army National Guard during fiscal year 1987. Table 3 shows the categories and numbers of officers contained in this file.

TABLE 3

FY87 DMDC Nurse Reserve Accessions File

<u>Personnel Category</u>	<u>USAR</u>	<u>ARNG</u>
Troop Program Unit Personnel	1,051	104
Active Guard/Reserve	1	0
Individual Mob. Augmentee	0	0
ARNG Military Technicians	<u>0</u>	<u>1</u>
Total	1,052	105

## 4. Reserve Losses File

This file contains records for 590 nurses who left the U.S. Army Reserve or the U.S. Army National Guard during fiscal year 1987. Table 4 shows the categories and numbers of officers contained in this file.

We believe that both the Reserve accessions and losses data sets are missing an unknown, but presumably small number of records of officers who entered or left the USAR or ARNG during fiscal year 1987. This is the result of

TABLE 4

## FY87 DMDC Nurse Reserve Losses File

<u>Personnel Category</u>	<u>USAR</u>	<u>ARNG</u>
Troop Program Unit Personnel	515	66
Active Guard/Reserve	1	0
Individual Mob. Augmentee	5	0
ARNG Military Technicians	<u>0</u>	<u>3</u>
Total	521	69

occasional lengthy delays in reporting Reserve officer transactions to SIDPERS. We have tried to obtain some of these missing records by extracting the appropriate records from the DMDC transaction files for the first three quarters of fiscal year 1988. (Fiscal year 1987 loss and accession transactions which experience reporting delays are reported in later year DMDC transaction files, rather than in DMDC transaction files for fiscal year 1987.) However, it is impossible to know for certain the number of yet to be reported transactions remaining for fiscal year 1987.

### III. FY87 PROFILES OF NURSE MEMBERS OF THE USAR AND THE ARNG

This chapter profiles several important demographic and military characteristics of the nurses who were in the Selected Reserve and the Army National Guard at the end of fiscal year 1987. Since the US Army Recruiting Command must recruit nurses from the civilian sector, we include selected demographic characteristics for employed registered nurses from a 1984 sample survey of 25,294 registered nurses by the US Department of Health and Human Factors (US Department of Health and Human Services, 1986). Frequency distributions are given for several demographic factors: age; gender; marital status; number of dependents; race-ethnic background; highest educational level; rank; commission source; location of units of assignment; training category; military education; and nurse specialty.

#### A. Age

The mean age for the USAR and the ARNG member nurses for whom we had age data was 37.5 years and 38.3 years, respectively. The youngest nurse was 21 and the oldest was 60. There was a slight positive skew in the age data, as the distribution extended further towards older ages. The vast majority of USAR and ARNG nurses were between the ages of 30 and 45 (slightly more than 75% were in this range). Table 5 shows the frequency distribution for age, grouped by increments of ten years, while Figure 4 shows the mean age for USAR nurses of each rank from Second Lieutenant to Colonel.

Civilian registered nurses had a similar mean age of 39 years but there were more nurses both under 35 years and over 55 years of age among this population. The compacted USAR/ARNG age distribution is of course mainly due to the military retirement system, the pyramid rank structure, and organizational

emphasis on youth.

TABLE 5  
Age, USAR/ARNG and Civilian Nurses(a)  
September 30, 1987  
(percent)

Age Group (Years)	USAR (n=6,357)	ARNG (n=951)	Civilian Nurses(a) (n=25,294)
Under 25	1.4	0.6	5.8
25-34	30.0	26.7	36.9
35-44	56.1	56.4	26.8
45-54	11.5	15.3	17.7
55+	<u>1.0</u>	<u>1.0</u>	<u>12.8</u>
Total	100.0	100.0	100.0
Missing	(138)	(0)	(400)

(a) November 1984

#### B. Gender

Table 6 shows the gender distribution for USAR and ARNG nurses as well as for civilian RNs. For the Selected Reserve, 77% of the nurses were female, while 23% were male. In the ARNG, 68.2% of the nurses were female, while 31.8% were male. Note that there is a significantly higher fraction of male nurses in the ARNG than in the USAR Selected Reserve. (In a two sample hypothesis test for the difference between percentages, this difference was significant at the 0.007% level).

Only 3.3% of the employed registered nurse population was male in 1984. Hence, male nurses are about seven times more prevalent in the USAR than in the civilian sector. Figure 5 shows the gender distribution for each USAR rank.

#### C. Marital Status

Table 7 indicates that nearly 31% of USAR nurses were single (never

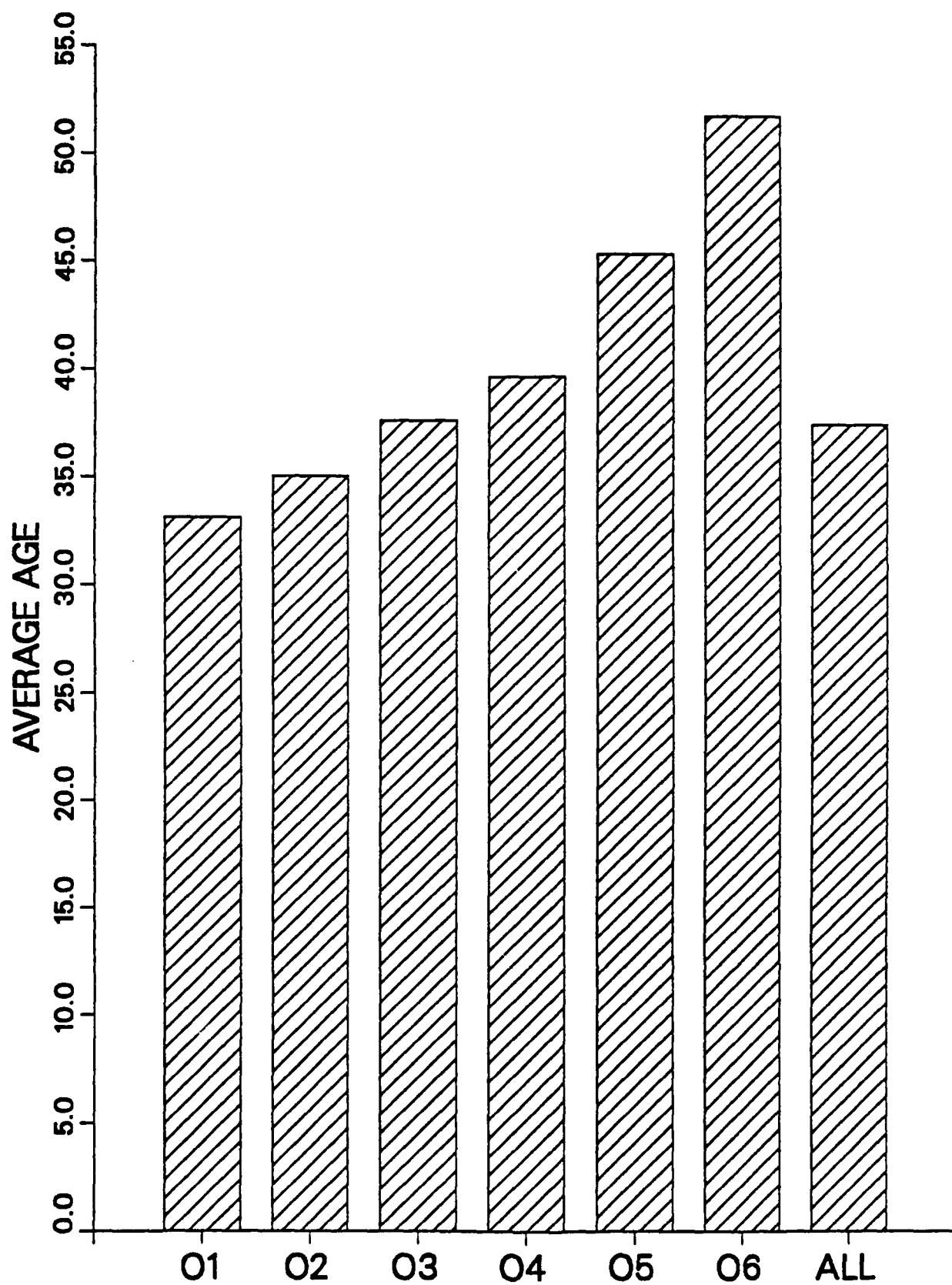


Figure 4  
Average Age by Rank, USAR Nurses, September 30, 1987

Table 6  
Gender, USAR/ARNG and Civilian Nurses (a)  
September 30, 1987  
(percent)

<u>Gender</u>	<u>USAR</u> <u>(n=6,357)</u>	<u>ARNG</u> <u>(n=951)</u>	<u>Civilian Nurses (a)</u> <u>(n=25,294)</u>
Male	22.8	31.8	3.3
Female	<u>77.2</u>	<u>68.2</u>	<u>96.7</u>
Total	100.0	100.0	100.0
Missing	(13)	(0)	(0)

(a) November 1984

Table 7  
Marital Status, USAR/ARNG and Civilian Nurses (a)  
September 30, 1987  
(percent)

<u>Marital Status</u>	<u>USAR</u> <u>(n=6,357)</u>	<u>ARNG</u> <u>(n=951)</u>	<u>Civilian Nurses (a)</u> <u>(n=25,294)</u>
Single, never married	30.7	22.1	15.7
Single, previously married	11.4	14.8	15.0
Married	<u>57.9</u>	<u>63.1</u>	<u>69.3</u>
Total	100.0	100.0	100.0
Missing	(242)	(0)	(241)

(a) November 1984

married), 11% were previously married, and slightly more than 58% were married. Slightly more than 22% of the ARNG nurses were single (never married), 14.8% were previously married, and slightly more than 63% were married. Employed civilian sector nurses show a somewhat different marital status distribution with over 69% married and only about 16% single (never married). Figure 6 shows the marital



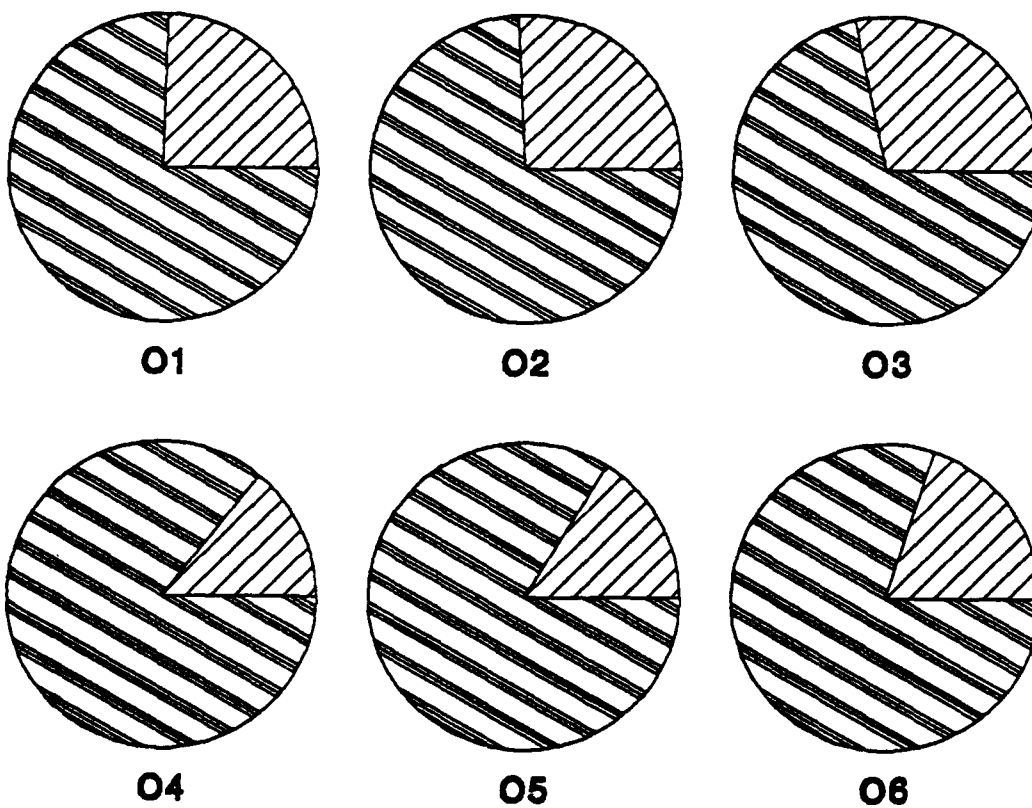
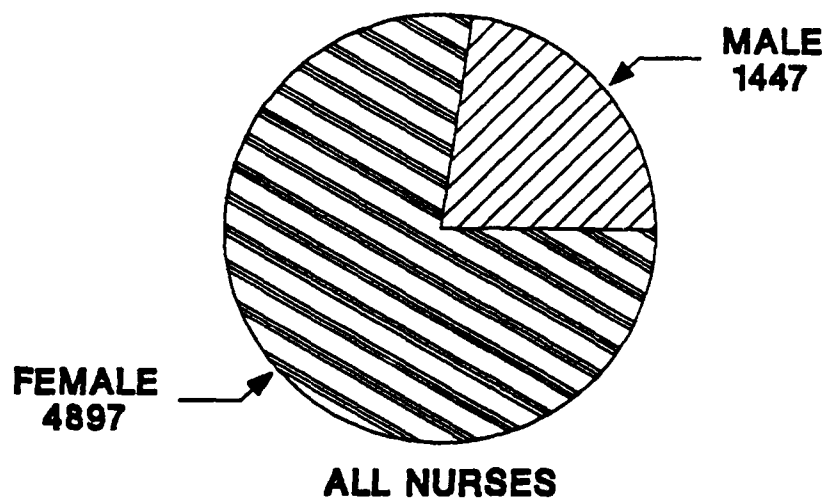


Figure 5

Gender by Rank, USAR Nurses, September 30, 1987

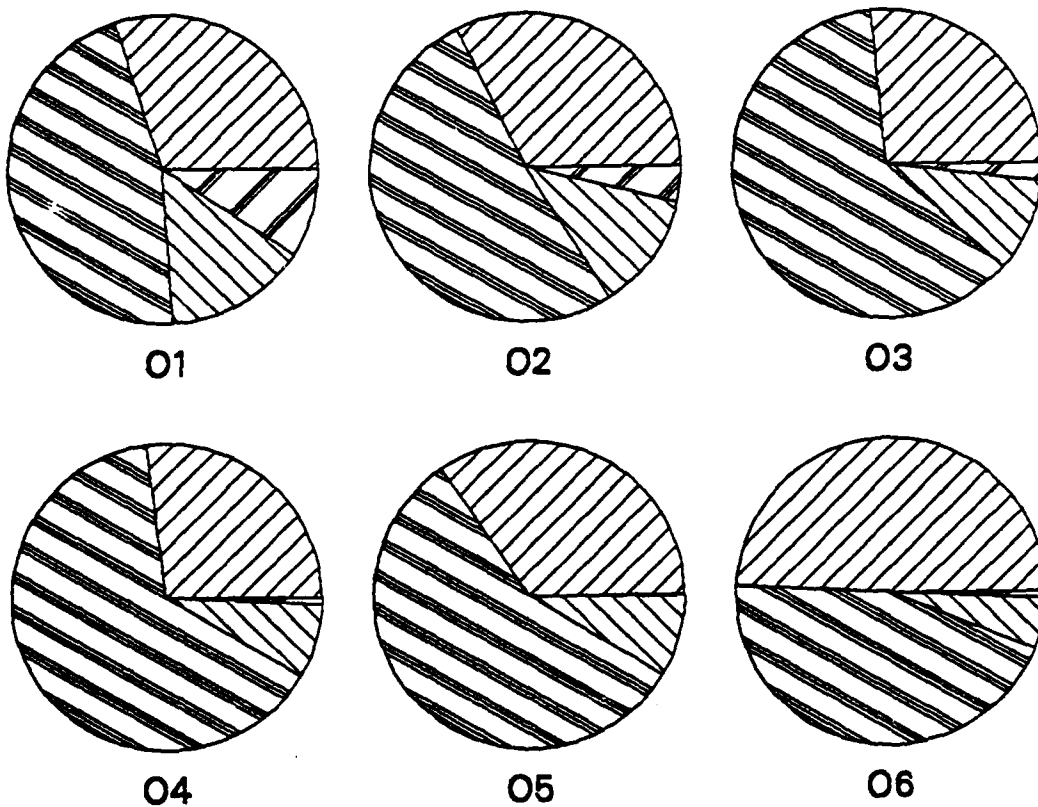
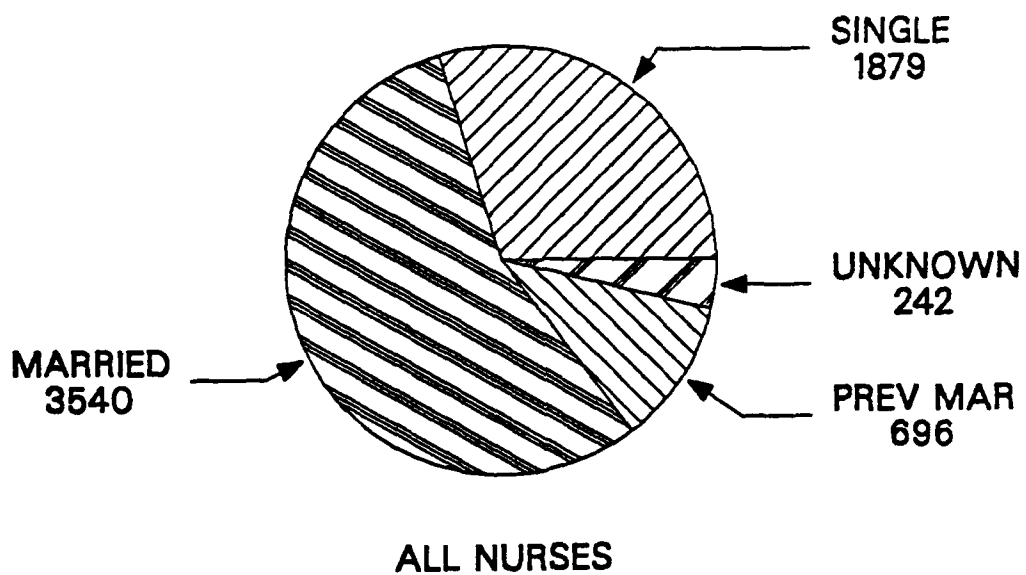


Figure 6  
Marital Status by Rank, USAR Nurses, September 30, 1987

status distribution for each rank for USAR nurses.

#### D. Number of Dependents

Table 8 shows the frequency distribution for number of dependents, not including the service member (spouses are included in most cases). More than a quarter of the USAR (29.3%) and ARNG (26.7%) nurses had no dependents. This information was not available for civilian sector nurses in a compatible format. Figure 7 contains a bar chart which shows the mean number of dependents for all the USAR nurses in the data set, and also for each rank. Note the expected increase in mean number of dependents over the ranks from Second Lieutenant to Captain, followed by a steep dropoff over the ranks from Captain to Colonel.

TABLE 8

Number of Dependents, not Including Member, USAR/ARNG Nurses  
30 September 1987  
(percent)

<u>Number of Dependents</u>	<u>USAR (n=6,357)</u>	<u>ARNG (n=951)</u>
0	29.8	26.7
1	20.6	27.3
2	20.3	16.4
3	18.1	18.6
4 or more	<u>11.2</u>	<u>11.0</u>
Total	100.0	100.0
Missing	(238)	(0)

#### E. Race-Ethnic Status

Table 9 indicates the race-ethnic distributions for USAR/ARNG and civilian nurses. Compared with the civilian sector, both the USAR and ARNG have more minority nurses. Over 5% of ARNG nurses and about 2% of USAR nurses were

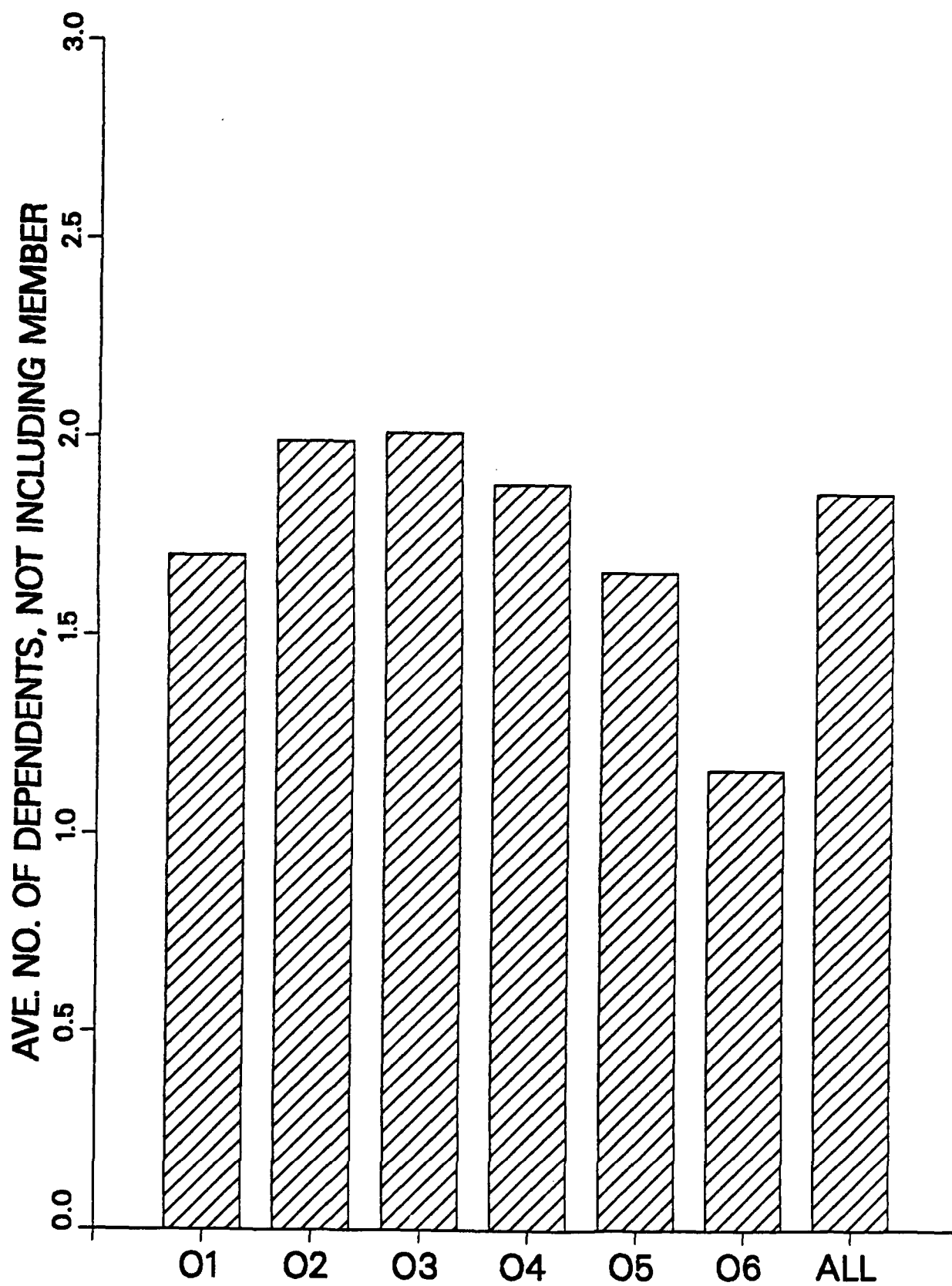


Figure 7

Average Number of Dependents by Rank, USAR Nurses, September 30, 1987

Hispanic, compared with 1.6% of employed civilian nurses. Blacks represented 17.1% of USAR nurses and 8.0% of ARNG nurses. Blacks comprised less than 5% of the population of civilian RNs. Figure 8 shows the race-ethnic breakdown for all USAR nurses and for each rank.

Table 9  
Race-Ethnic Group, USAR/ARNG and Civilian Nurses<sup>(a)</sup>  
September 30, 1987  
(percent)

<u>Race-Ethnic Group</u>	<u>USAR (n=6,357)</u>	<u>ARNG (n=951)</u>	<u>Civilian Nurses<sup>(a)</sup> (n=25,294)</u>
White	77.2	85.4	90.4
Black	17.1	8.0	4.6
Hispanic	2.1	5.3	1.6
Other	3.6	1.3	3.4
Total	100.0	100.0	100.0
Missing	(228)	(0)	(288)

(a) November 1984

#### F. Highest Education Level

Nurses in the Selected Reserve and the ARNG have a much higher level of education than does the overall population of registered nurses. Unfortunately, 30.2% of the USAR Selected Reserve nurse membership did not have a record for educational level. Table 10 shows the distribution of highest education level for nurses in the USAR and ARNG membership file for whom a specific highest educational level was recorded. The majority of these nurses had at least a Bachelor's degree, (USAR 77.5%, ARNG 70.9%). These data imply that if recruiting goals target the Bachelor's degree market, then the market is reduced to about one-third of employed civilian registered nurses.

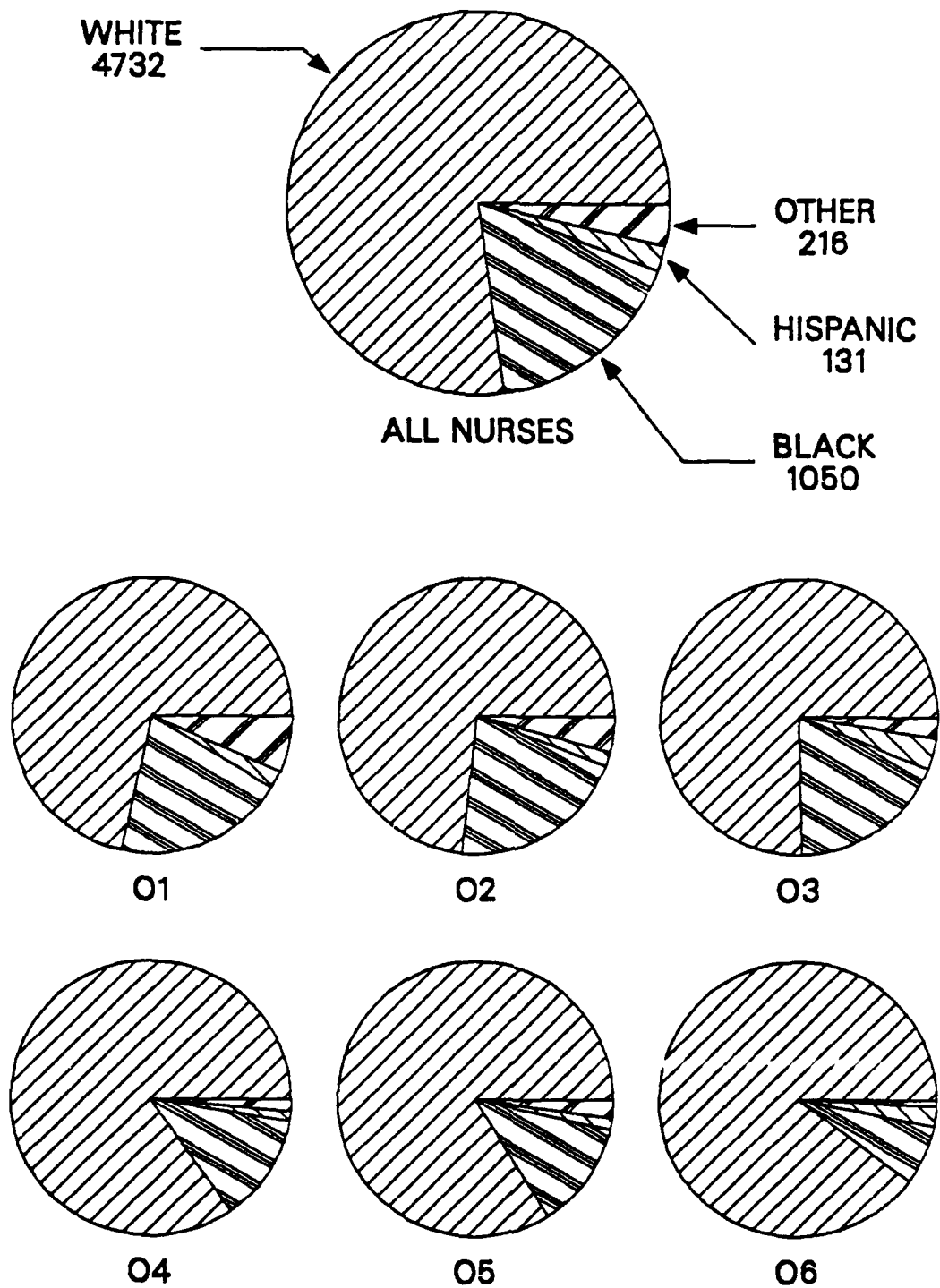


Figure 8

Race-Ethnic Group by Rank, USAR Nurses, September 30, 1987

TABLE 10

Highest Educational Level USAR/ARNG and Civilian Nurses  
30 September 1987  
(percent)

<u>Level</u>	<u>USAR</u> <u>(n=6,357)</u>	<u>ARNG</u> <u>(n=951)</u>	<u>Civilian Nurses</u> <sup>(a)</sup> <u>(N=25,294)</u>
Diploma/other	3.0	2.6	41.9
Associate's Degree	19.5	26.5	25.2
Bachelor's Degree	57.3	56.3	26.8
Master's Degree	18.9	12.6	5.8
Doctorate	<u>1.3</u>	<u>2.0</u>	<u>0.3</u>
Total	100.0	100.0	100.0
Missing	(1,476)	(0)	(119)

(a) November 1984

#### G. Home of Record

The recruiting region in which a Reserve nurse has his or her home of record can provide some information about the geographic representation of nurses in the Reserves. Table 11 shows the distribution of USAR and ARNG nurses in each of five regions of the country. Figure 9 shows the breakdown of home of record region for each rank for USAR nurses. The Northeast was the home region for the largest number of USAR Reserve nurses (31.3%), while the Southeast had the highest percent of ARNG nurses (26.7%).

#### H. Rank

Table 12 shows the rank distribution for USAR nurses as of 30 September 1987. About 44% were Lieutenants, while almost 47% held the rank of Captain or Major. Less than 10% had attained the rank of Lieutenant Colonel or Colonel. For the ARNG, Lieutenants made up about 31% of nurse officers, Captains and Majors almost 59%, and Lieutenant Colonels and Colonels about 10%.

TABLE 11

Home of Record by Recruiting Region, USAR/ARNG Nurses  
30 September 1987  
(percent)

<u>Recruiting Region</u>	<u>USAR (n=6,357)</u>	<u>ARNG (n=951)</u>
Northeast	31.3	20.0
Southeast	19.1	26.7
North Central	17.8	15.0
South Central	16.4	24.4
West	<u>15.4</u>	<u>13.9</u>
Total	100.0	100.0
Missing	(140)	(0)

TABLE 12

Rank, USAR/ARNG Nurses  
30 September 1987  
(percent)

<u>Rank</u>	<u>USAR (n=6,357)</u>	<u>ARNG (n=951)</u>
2LT	26.5	18.6
1LT	17.6	12.5
CPT	24.8	30.6
MAJ	21.9	28.1
LTC	7.2	8.2
COL	<u>2.0</u>	<u>2.0</u>
Total	100.0	100.0
Missing	(0)	(0)

#### I. Source of Commission

The distribution of commissioning source for the 6,357 USAR nurses and 951 National Guard nurses is shown in Table 13. Note that several USAR members originally obtained their Army commissions from the National Guard State Officer Candidate School. At least 95% of USAR/ARNG nurses received their commissions by



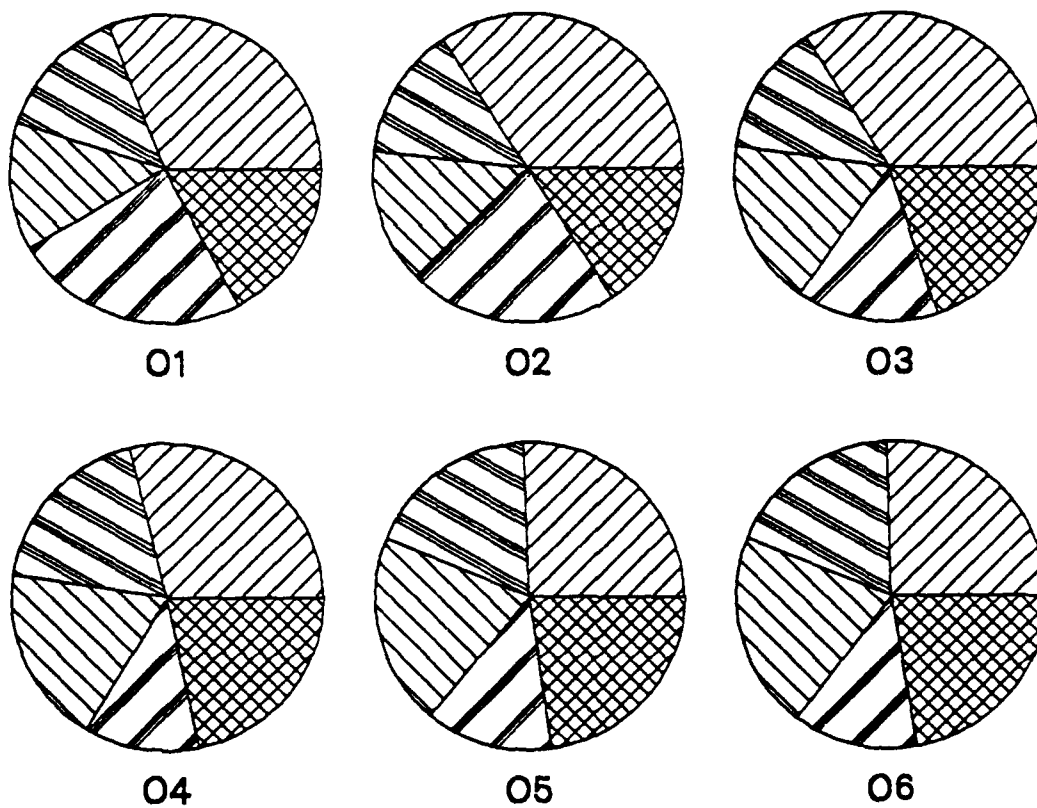
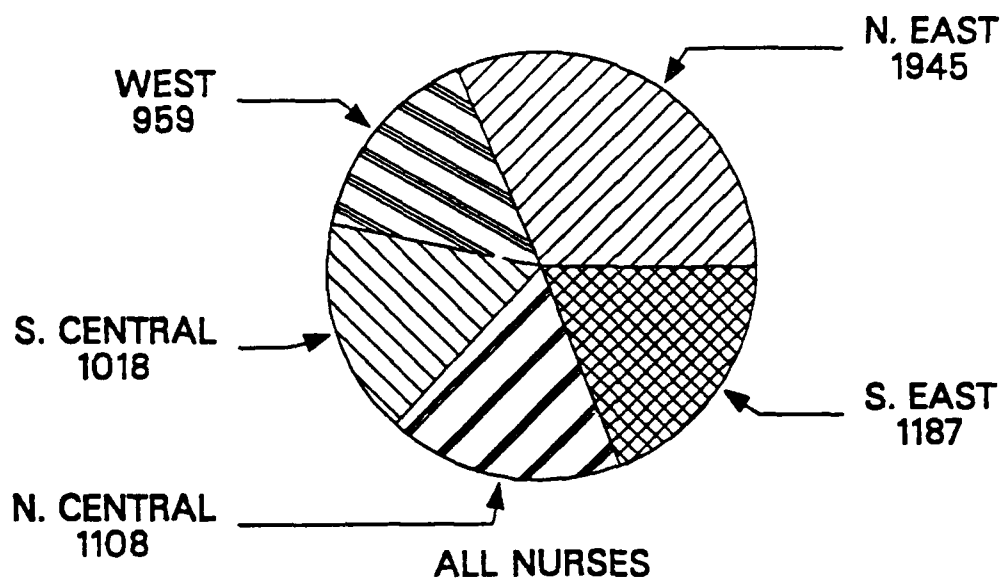


Figure 9

Home of Record by Recruiting Region and Rank, USAR Nurses, September 30, 1987

TABLE 13

Source of Commission, USAR/ARNG Nurses  
30 September 1987  
(percent)

<u>Source</u>	<u>USAR</u> <u>(n=6,357)</u>	<u>ARNG</u> <u>(n=951)</u>
West Point	0.2	0.0
ROTC Scholarship	0.2	0.2
ROTC Non-scholarship	2.2	1.0
OCS/AOCS/OTS	0.5	1.8
ARNG State OCS	0.1	0.6
Direct Appt.	95.2	95.0
Other	<u>1.6</u>	<u>1.4</u>
Total	100.0	100.0
Missing	(689)	(30)

direct appointment. Figure 10 shows the USAR distribution of commission source by rank.

#### J. Geographic Distribution

The geographic distribution of the location of the units of assignment of the nurses in the USAR and ARNG, by recruiting region, is given in Table 14. Figure 11 shows this geographic distribution for all USAR nurses for each individual rank from Second Lieutenant to Colonel. The Northeast region was the location of the largest percentage of Reserve nurses (32.6%), while the Southeast had the highest proportion of the ARNG nurses. The West region had the smallest percentage of USAR (15.6%), and ARNG (13.7%) nurses.

#### K. Training Category

Of the 6,357 USAR nurses, 96.7% were listed as being assigned to troop program units (TFUs), while 1.5% were Active Guard/Reserve (AGR), and 1.8% were individual mobilization augmentees (IMAS). Of the 951 nurses in the data set for

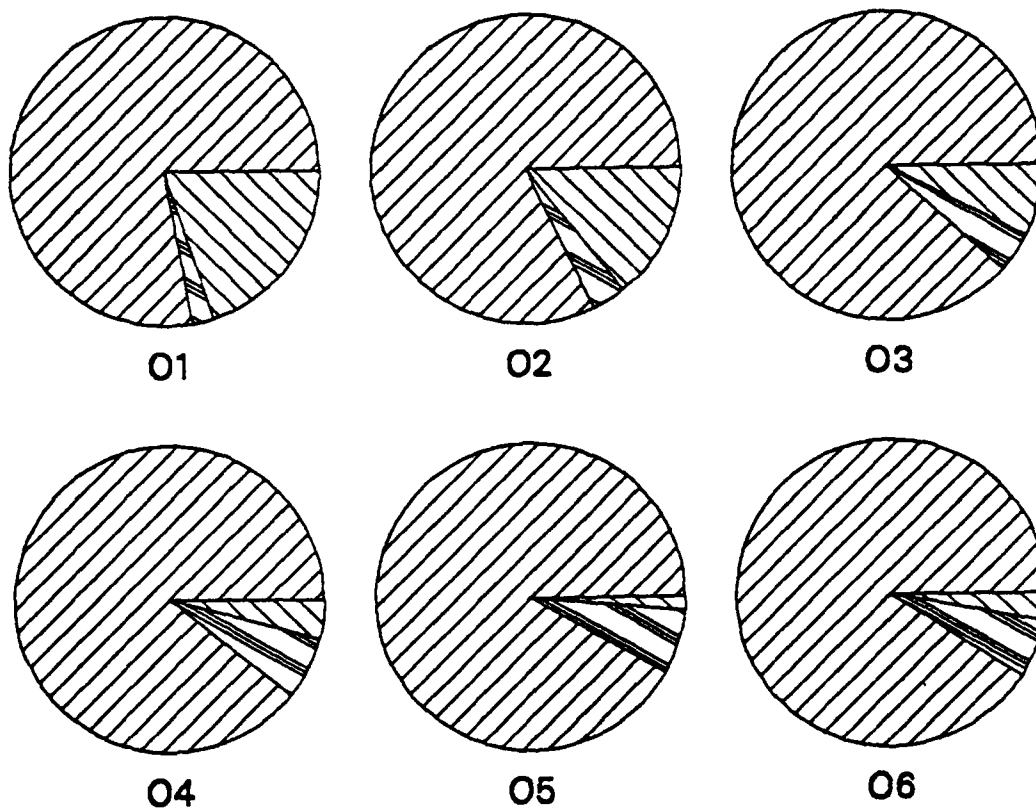
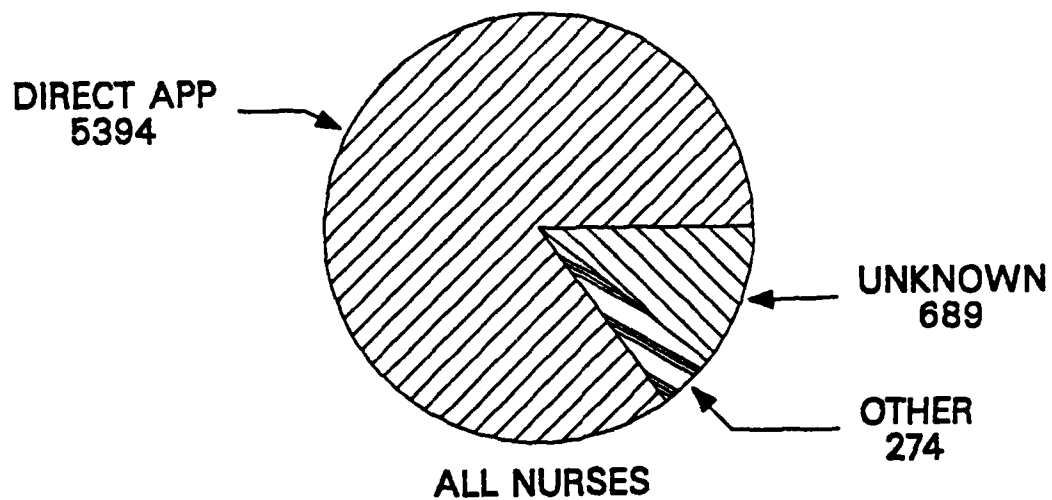


Figure 10

Source of Commission by Rank, USAR Nurses, September 30, 1987

TABLE 14

Unit of Assignment by Recruiting Region, USAR/ARNG Nurses  
30 September 1987  
(percent)

<u>Region</u>	<u>USAR</u> <u>(n=6,357)</u>	<u>ARNG</u> <u>(n=951)</u>
Northeast	32.6	20.3
Southeast	18.1	26.1
North Central	16.9	15.4
South Central	16.8	24.6
West	<u>15.6</u>	<u>13.7</u>
Total	100.0	100.0
Missing	(33)	(0)

National Guard nurses, 93% were listed as being assigned to troop program units. About 2% were Active Guard/Reserve (AGR), and almost 5% were categorized as either military technicians or in officer training programs. Figure 12 shows the training category distribution of USAR nurses by rank.

#### L. Military Education

Professional military education for nurses in the USAR begins typically with a 2 week initial skill course. This may be followed by a skill progression course around the time the nurse is promoted to the grade of Captain. (Note that there is substantial variability in the point in time when this course is taken.) The third level of military education is the intermediate service school. Nurses who obtain this level of military education usually do so by attending the Command and General Staff College. For Reservists, this latter course can be taken one of 3 ways: by correspondence; through the USAR school system, in which case the course takes 3 years of part time study to complete; or in residence. (Reservists infrequently use this last option). The highest level of military education occurs at a senior service school, such as the Army War College or the

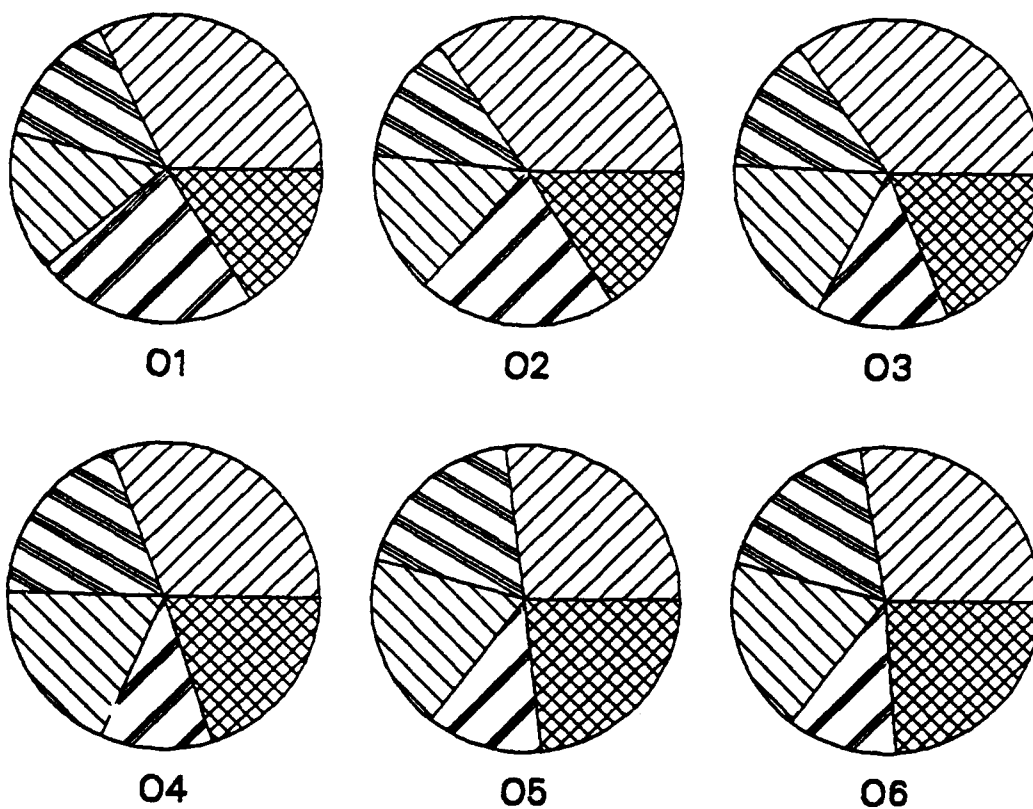
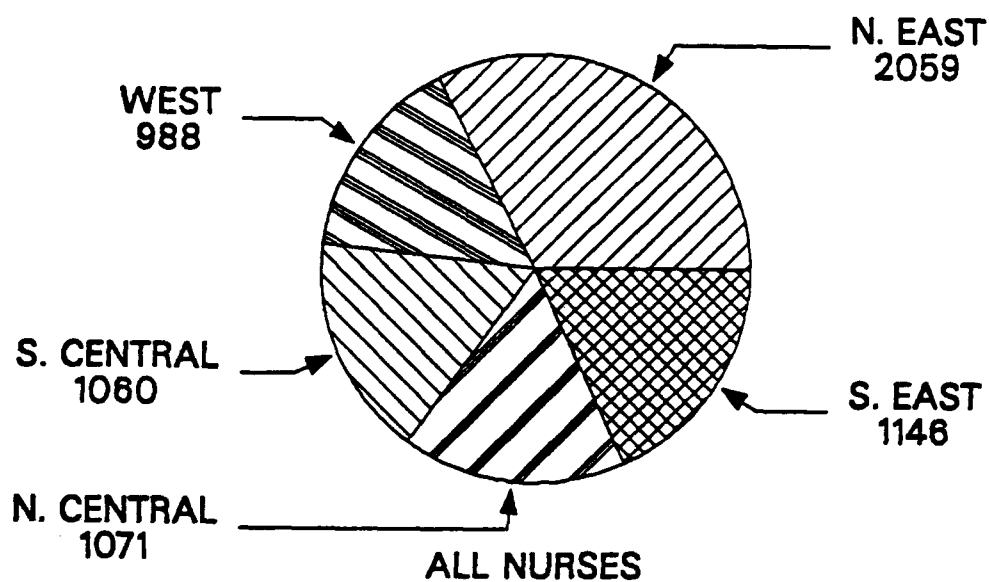


Figure 11

Unit of Assignment by Recruiting Region and Rank, USAR Nurses, September 30, 1987

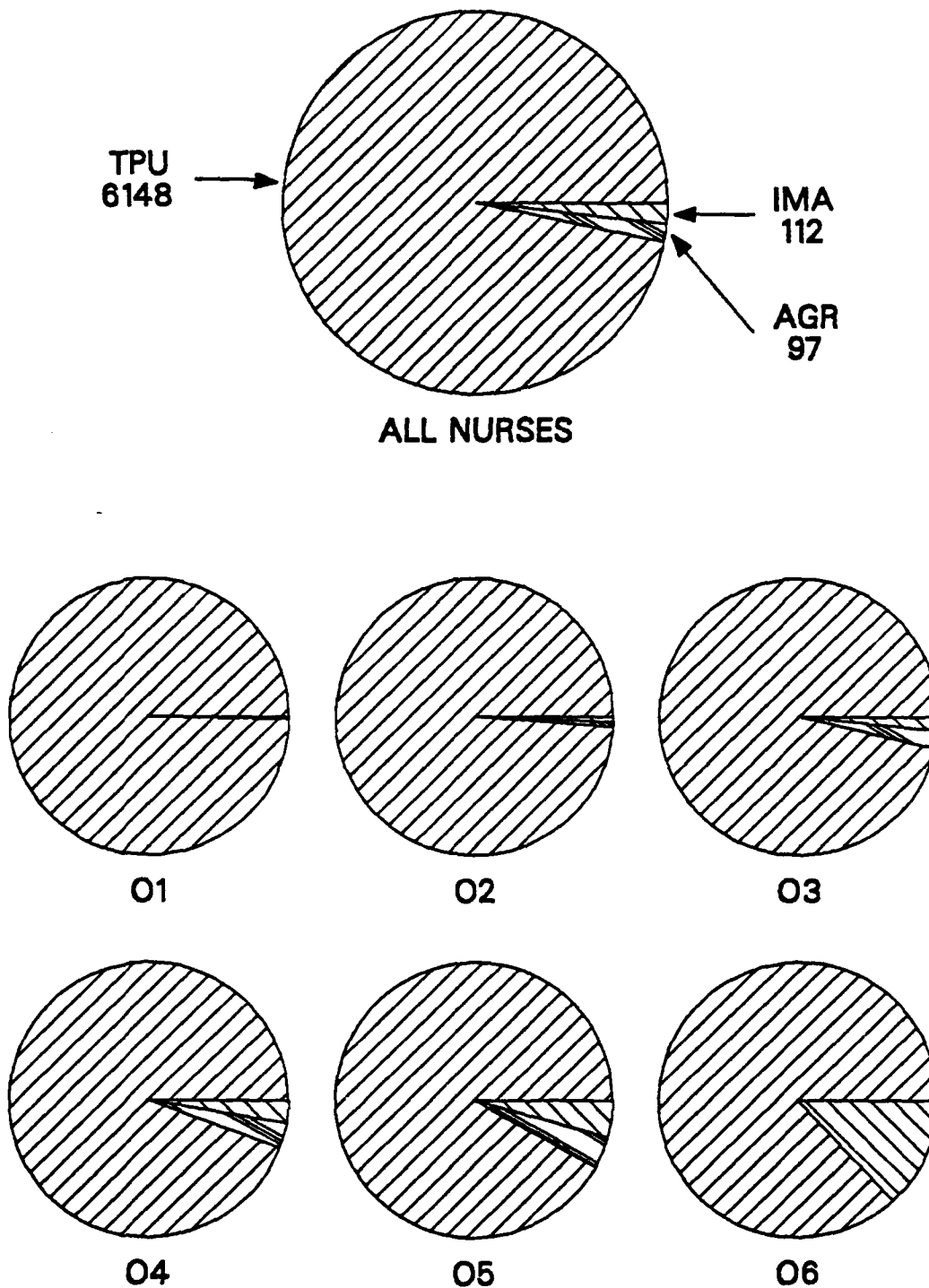


Figure 12

Training Category by Rank, USAR Nurses, September 30, 1987

Navy War College. Generally speaking, few USAR nurses ever avail themselves of the highest two levels of military education, as Table 15 shows.

TABLE 15

Highest Level of Military Education, USAR/ARNG Nurses  
30 September 1987  
(percent)

<u>Level</u>	<u>USAR</u> <u>(n=6,357)</u>	<u>ARNG</u> <u>(n=951)</u>
Senior Service School	0.1	0.0
Intermediate Svc School	5.8	8.6
Skill Progression Sch.	18.2	27.2
Initial Skill School	37.5	39.6
None	<u>38.4</u>	<u>24.6</u>
Total	100.0	100.0
Missing	(16)	(297)

Professional military education for nurses in the National Guard follows a pattern similar to that for Selected Reserve nurses. Unfortunately, nearly half of the records for National Guard nurses were either missing or indicated that the officer had no military schooling. Because the data for this characteristic appeared to be incomplete, this information must be viewed with caution. None of the nurses in the data set appeared to have completed a senior service school. The most common highest level of ARNG nurse military schooling was initial skill training (39.6%). Figure 13 graphically depicts the distribution of highest level of military education for USAR nurses by rank.

#### M. Retirement Points

Only 63.6% of USAR nurses and 56.5% of ARNG nurses had a positive number of retirement points. The record keeping system for retirement points in the Reserves may reflect inaccuracies as well as omissions as mentioned in Chapter II.

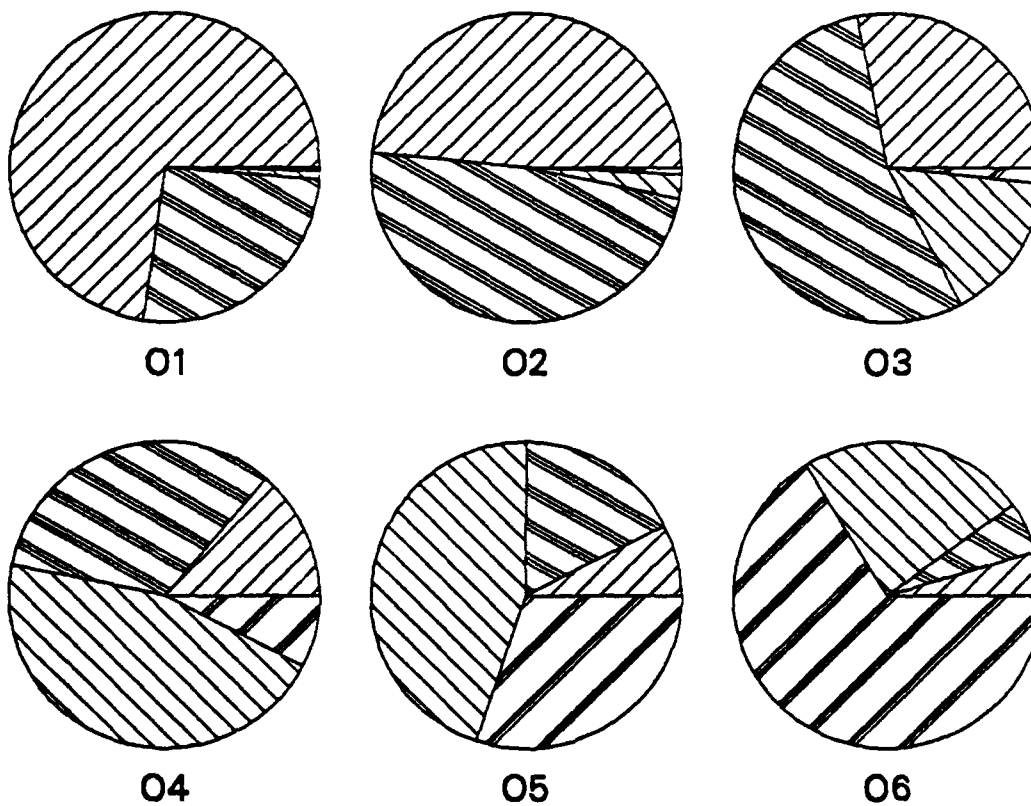
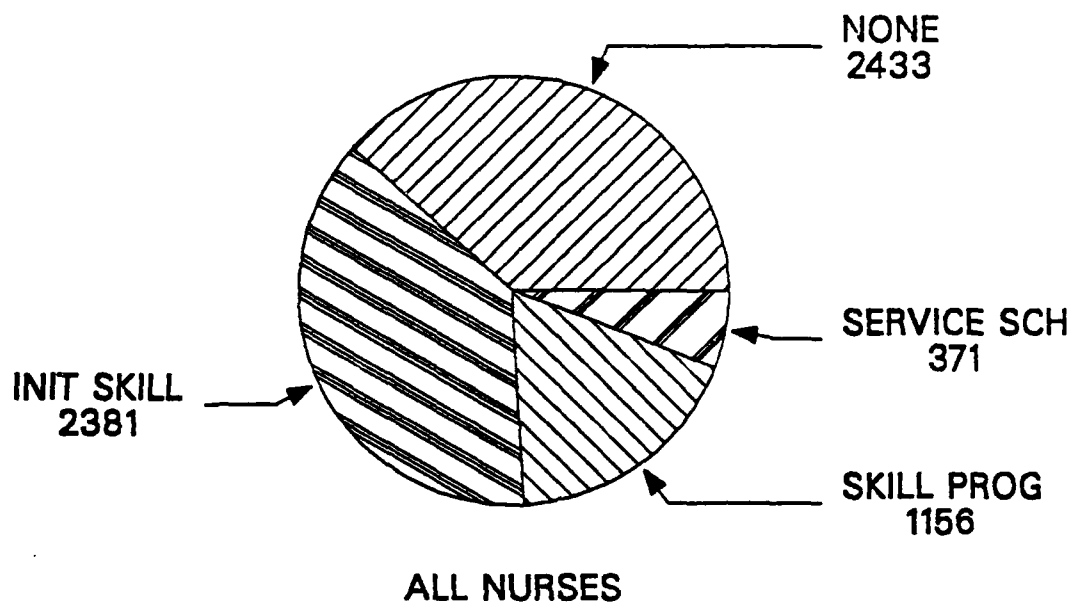


Figure 13

Highest Level of Military Education by Rank, USAR Nurses, September 30, 1987



Hence, these fields do not support substantial analysis.

#### N. Nursing Specialty

The Reserve nurse membership data set contained information about specific nursing specialty in the form of duty MOS and primary MOS. Table 16 shows the numbers of USAR nurses in each of the nursing specialties (primary MOS). Over 60% of USAR/ARNG officers were medical-surgical nurses. Nurse anesthetists and operating room nurses are extensively utilized in military settings and their supply is very limited. These two specialties made up 4.6% and 8.5% of all USAR nurses, respectively. Among ARNG nurses, 11.3% were classified as operating room nurses and 5.4% as nurse anesthetists. A few nurses (4% of ARNG nurses and .3% of USAR nurses) were serving in a Duty MOS which was not a nursing specialty. Figure 14 shows the nursing specialty distribution by rank.

TABLE 16  
Nursing Specialty, USAR/ARNG Nurses  
30 September 1987  
(percent)

<u>Specialty (Primary MOS)</u>	<u>USAR (n=6,357)</u>	<u>ARNG (n=951)</u>
66A Administrator	0.9	5.8
66B Community Health	2.2	0.9
66C Psychiatric	6.6	1.2
66D Pediatrics	3.9	0.2
66E Operating Room	8.5	11.3
66F Nurse Anesthetist	4.6	5.4
66G ObGyn	3.3	0.5
66H Medical-Surgical	60.0	68.6
66J Clinical	<u>10.0</u>	<u>6.1</u>
Total	100.0	100.0
Missing	(0)	(0)

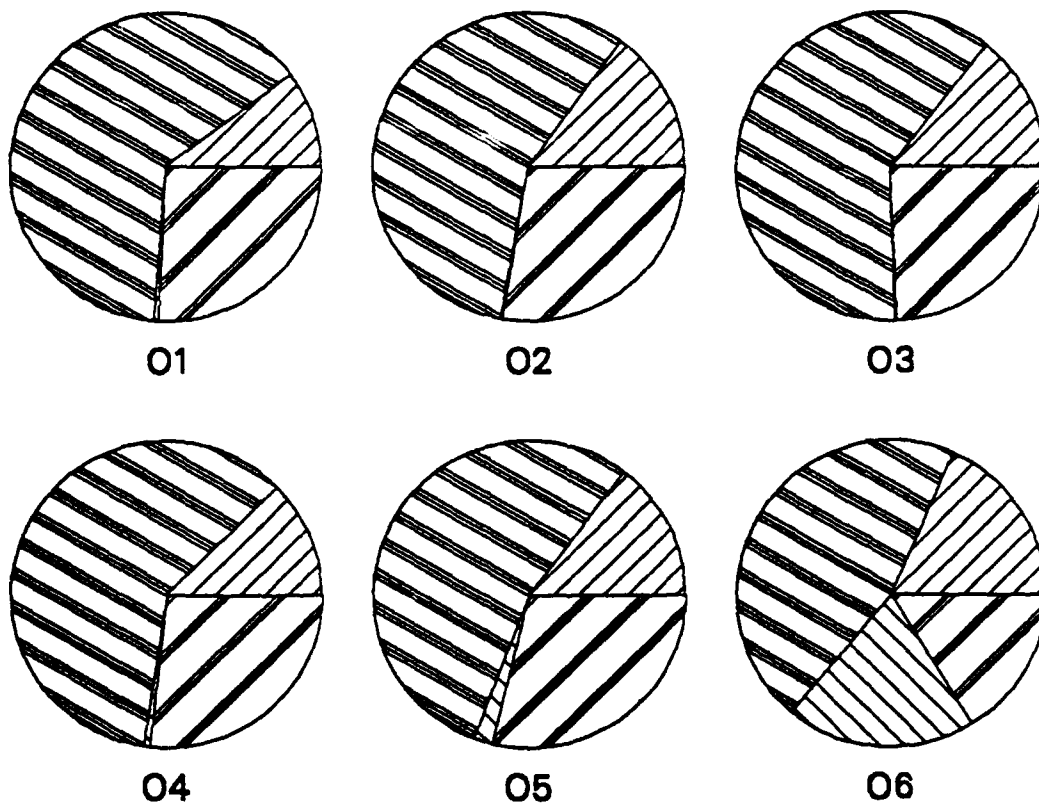
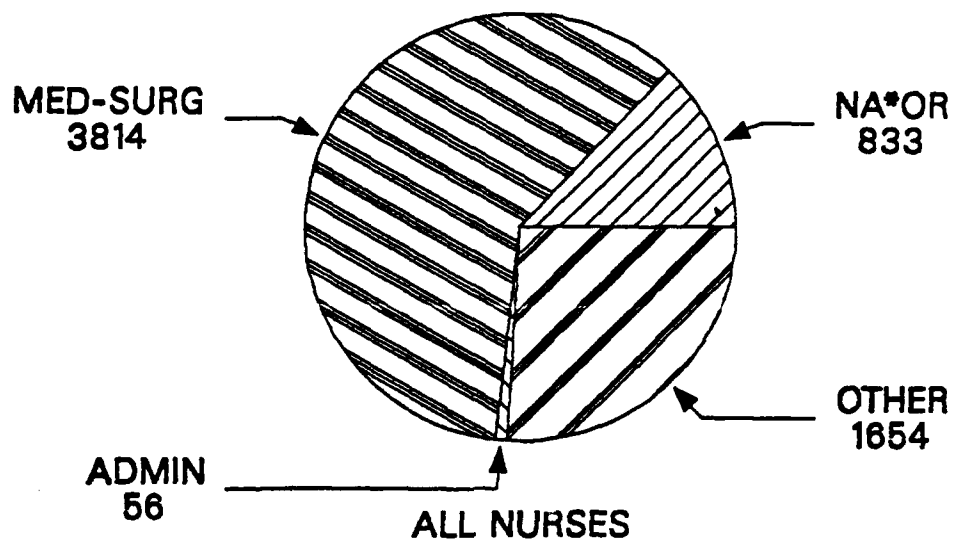


Figure 14

Nursing Specialty by Rank, USAR Nurses, September 30, 1987

#### IV. PROFILES OF USAR AND ARNG NURSE ACCESSIONS AND LOSSES IN FY87

This chapter profiles several important demographic and military characteristics both of the nurses who entered the Selected Reserve and the Army National Guard and those who left during fiscal year 1987. Frequency distributions are given for the same characteristics profiled in the previous membership chapter. A comparison of the flow values with the stock values in Chapter III will provide a measure of changes in the Reserve Army Nurse Corps.

##### A. Age

The mean age for the Selected Reserve nurses who entered the USAR during fiscal year 1987 was 33.3 years as compared to 35.1 years for ARNG nurse accessions. The youngest USAR and ARNG nurse accessions were 21 and 22 years old, respectively, while the oldest were 57 and 52 respectively. There was a slight positive skew in the age data, as the distribution extended towards older ages. For both the USAR and the ARNG, approximately 75% of nurse accessions were between the ages of 25 and 39. Table 17 shows the frequency distribution for age, grouped by increments of ten years. Figure 15 displays mean age by rank for the nurses in the Selected Reserve.

The mean age for USAR and ARNG nurses who left the USAR during fiscal year 1987 was 35.7 and 37.4 years respectively. The youngest USAR nurse loss was 23 and the oldest was 56 compared to 25 years and 58 years for ARNG nurse losses. There was a very slight positive skew in the age data, as the distribution extended towards older ages. The vast majority of Reserve nurse losses were between the ages of 29 and 44 (slightly more than 75% were in this range). Figure 16 shows mean age by rank for nurse losses in the Reserve.

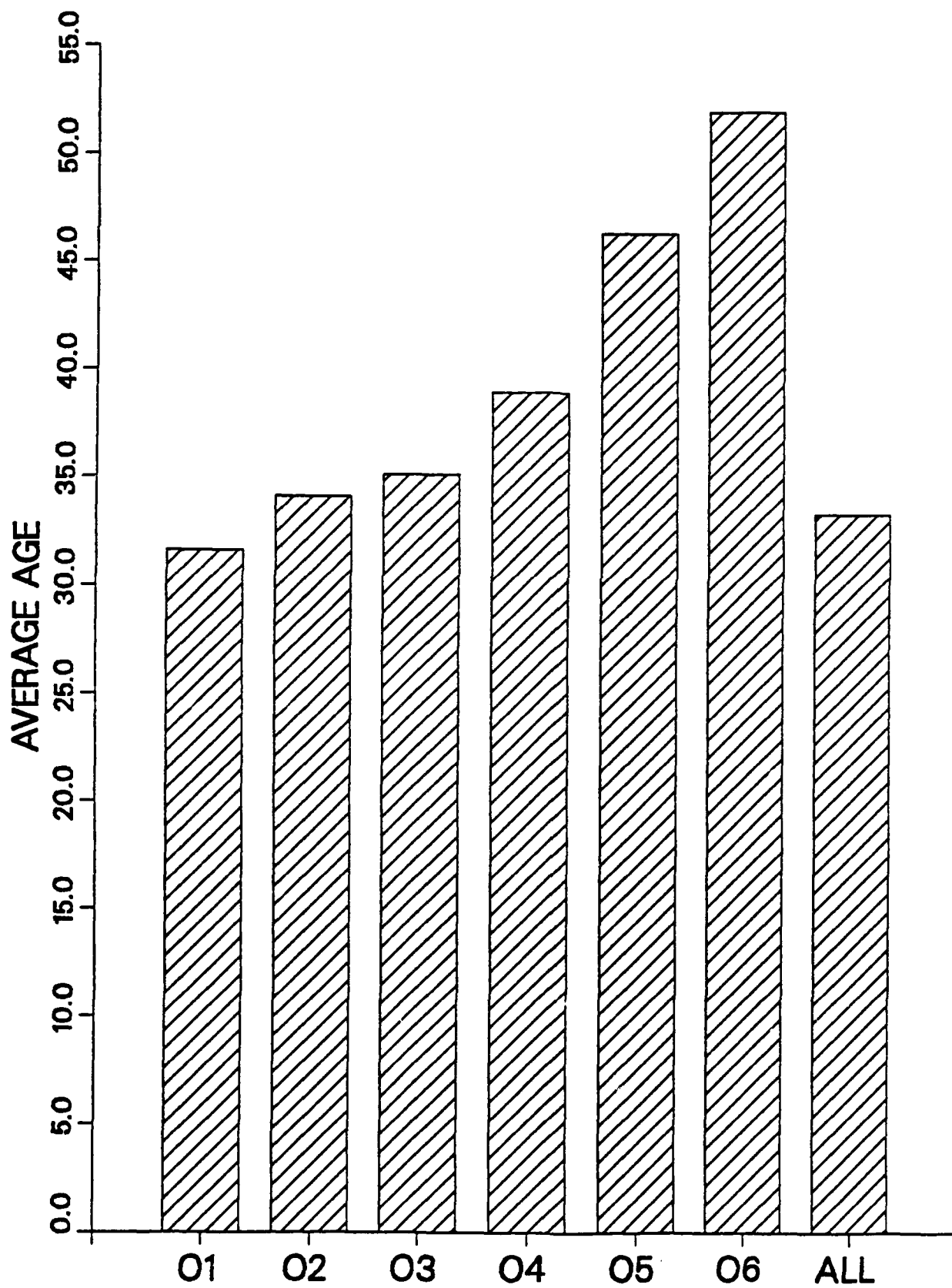


Figure 15

Average Age by Rank, USAR Nurse Accessions, FY 1987

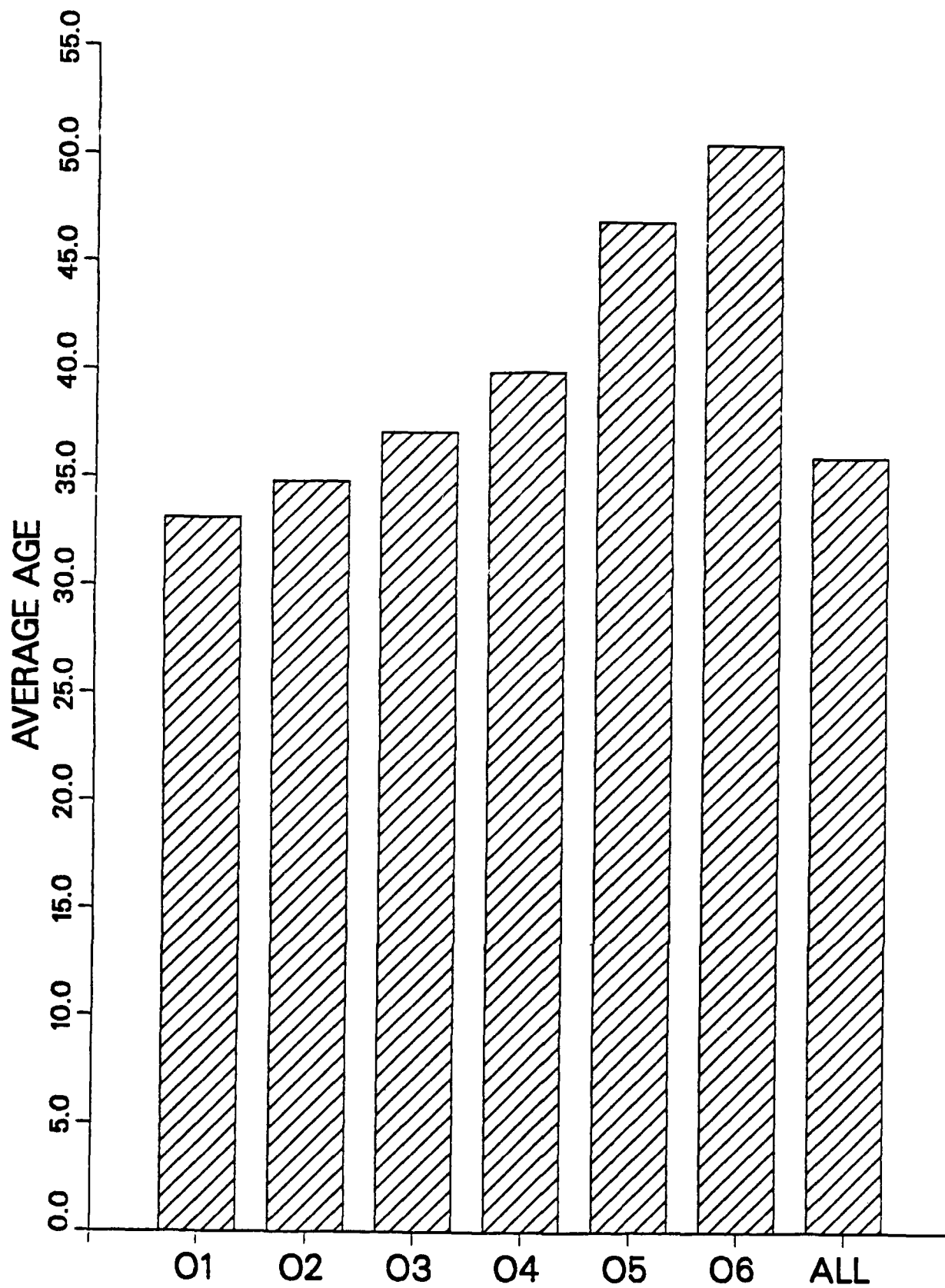


Figure 16  
Average Age by Rank, USAR Nurse Losses, FY 1987

TABLE 17

Age, USAR/ARNG Nurse Accessions and Losses, FY 1987  
(percent)

Age Group (Years)	Accessions		Losses	
	USAR (n=1,052)	ARNG (n=105)	USAR (n=521)	ARNG (n=69)
Under 25	8.7	2.9	1.6	0.0
25-34	49.2	41.9	40.3	34.7
35-44	39.3	50.4	49.9	49.2
45-54	2.3	4.8	7.7	14.5
55+	0.2	0.0	0.4	1.5
Total	100.0	100.0	100.0	100.0
Missing	(160)	(0)	(32)	(0)

#### B. Gender

USAR and ARNG accessions to the Selected Reserve during FY87 were 76% and 54% female, respectively, as shown in Table 18. In a Chi Square test for differences in proportions, the ARNG had a significantly lower percent of female accessions ( $p=.008$ ). For USAR accessions, Figure 17 shows this breakdown, both for the entire data set, and for each rank.

Of the nurse losses to the Selected Reserve during FY87, approximately 73% were female. Losses from the ARNG were also 73% female for FY 87. Figure 18

Table 18

Gender, USAR/ARNG Nurse Accessions and Losses, FY 1987  
(percent)

Gender	Accessions		Losses	
	USAR (n=1,052)	ARNG (n=105)	USAR (n=521)	ARNG (n=69)
Male	24.0	45.7	26.2	27.5
Female	76.0	54.3	73.8	72.5
Total	100.0	100.0	100.0	100.0
Missing	(11)	(0)	(6)	(0)

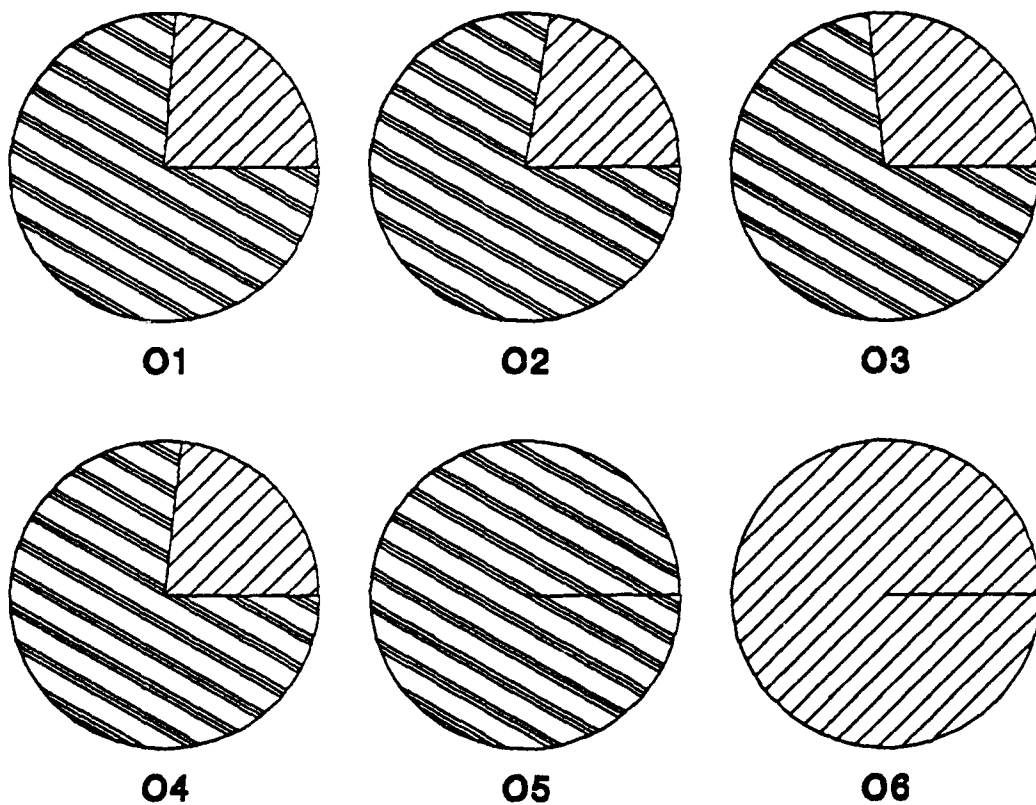
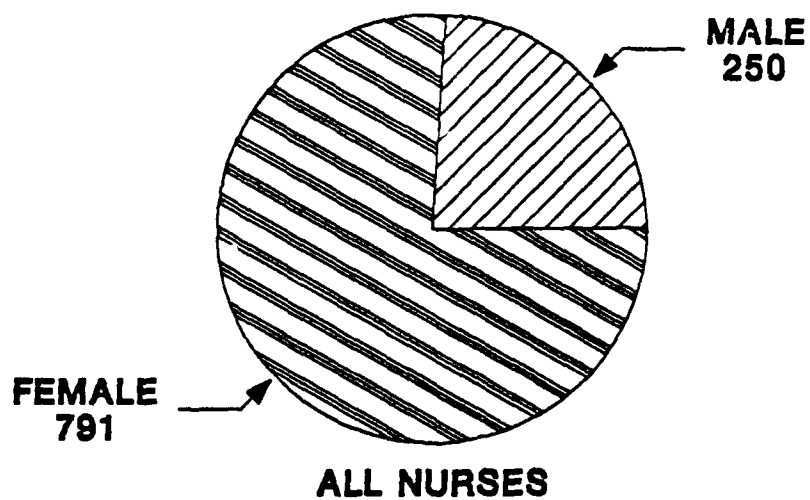
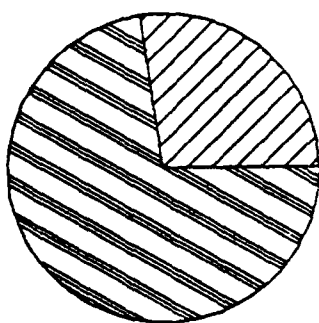
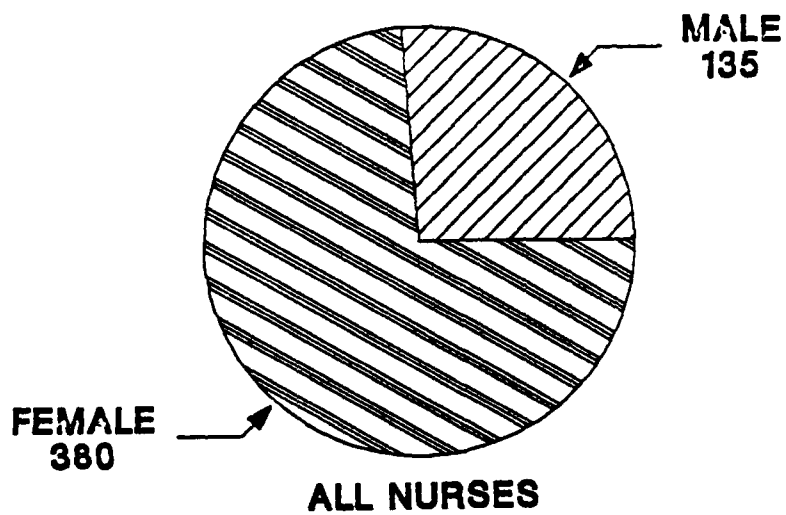
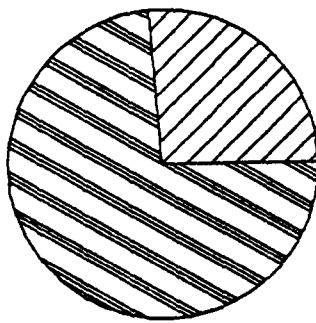


Figure 17

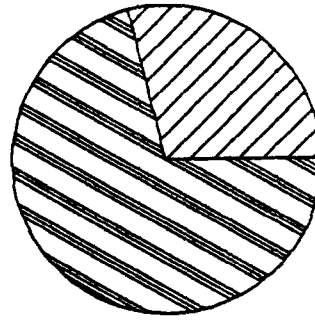
Gender by Rank, USAR Nurse Accessions, FY 1987



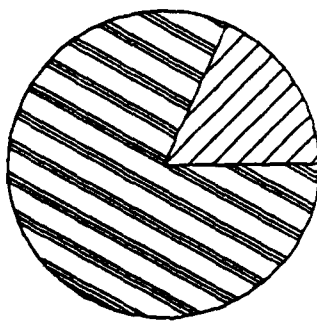
O1



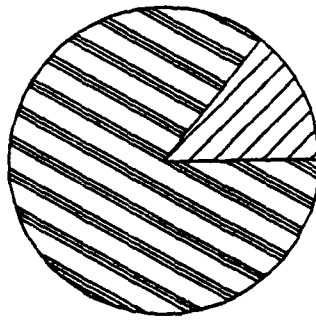
O2



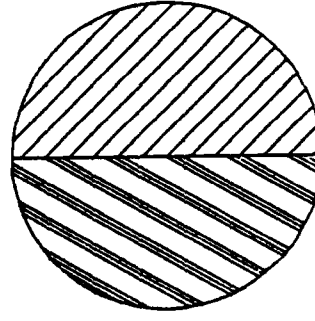
O3



O4



O5



O6

Figure 18

Gender by Rank, USAR Nurse Losses, FY 1987



shows the gender breakdown for losses by rank for the USAR.

### C. Marital Status

Table 19 indicates that almost 35% of nurse accessions to the Selected Reserve were single (never married) and 53.9% were married, compared to 21.0% and 66.6% respectively for single (never married) and married ARNG nurse accessions. Figure 19 depicts the marital status distribution for each rank for USAR nurse accessions.

Table 19

Marital Status, USAR/ARNG Nurse Accessions and Losses, FY 1987  
(percent)

<u>Marital Status</u>	<u>Accessions</u>		<u>Losses</u>	
	<u>USAR</u> <u>(n=1,052)</u>	<u>ARNG</u> <u>(n=105)</u>	<u>USAR</u> <u>(n=521)</u>	<u>ARNG</u> <u>(n=69)</u>
Single, never married	34.8	21.0	41.5	24.7
Single, previously married	11.3	12.4	3.9	15.9
Married	<u>53.9</u>	<u>66.6</u>	<u>54.6</u>	<u>59.4</u>
Total	100.0	100.0	100.0	100.0
Missing	(226)	(0)	(83)	(0)

Almost 42% of Selected Reserve nurse losses were single (never married), compared to 25% for the ARNG. Figure 20 shows the marital status distribution for USAR nurse losses by rank.

### D. Number of Dependents

Table 20 shows the frequency distribution for number of dependents for USAR and ARNG nurse accessions, not including the service member. Only 13.1% of ARNG nurse accessions had no dependents, compared with 42.0% for the USAR. More than a third of ARNG accessions had four or more dependents, while only about 7%

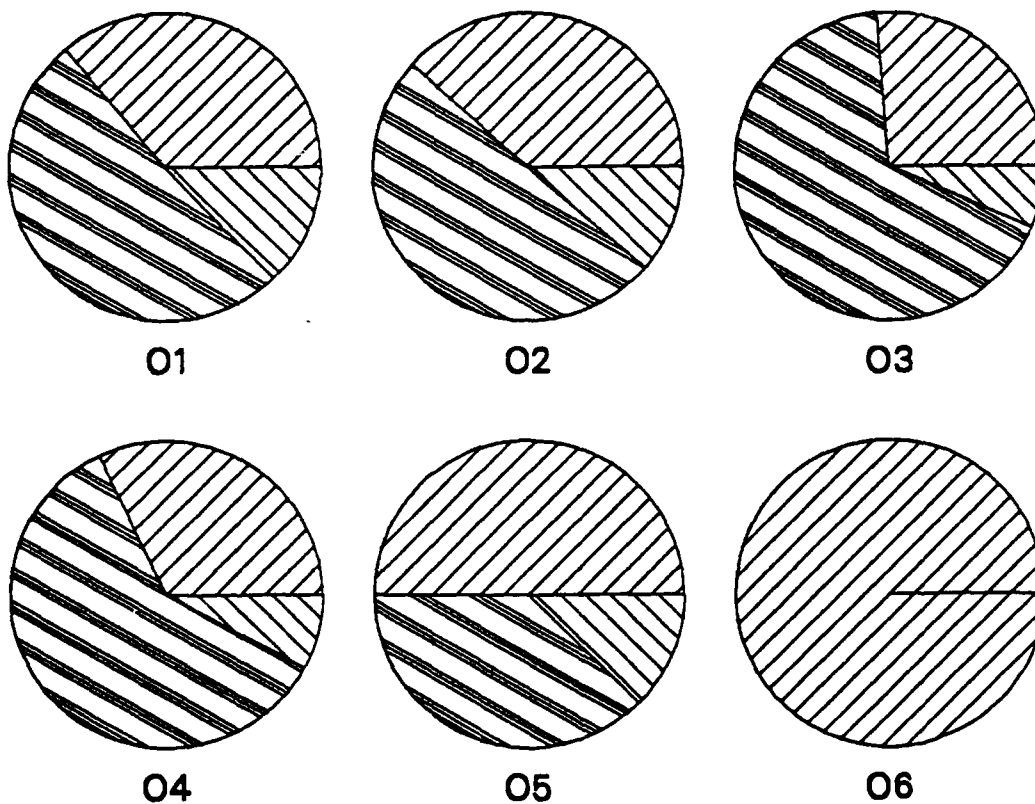
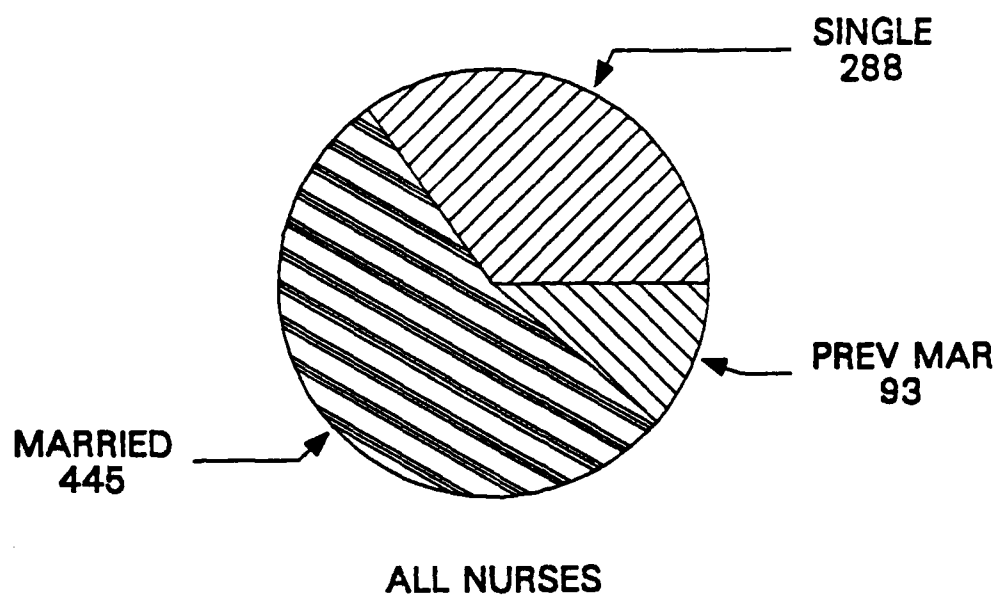


Figure 19

Marital Status by Rank, USAR Nurse Accessions, FY 1987

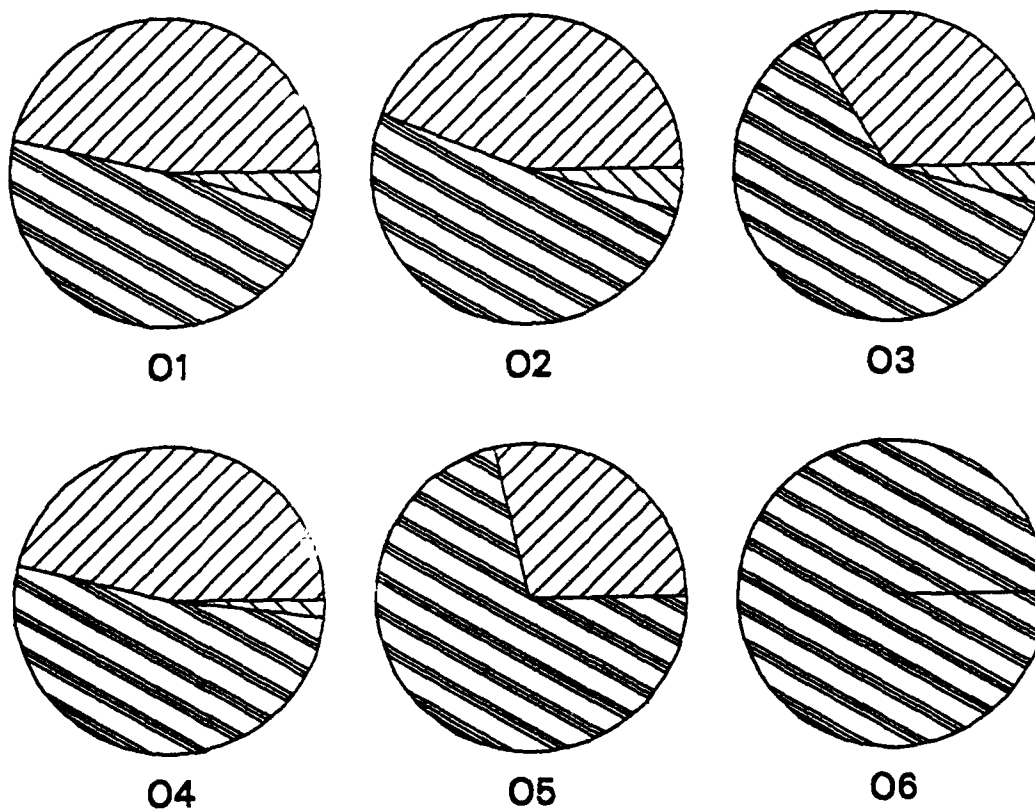
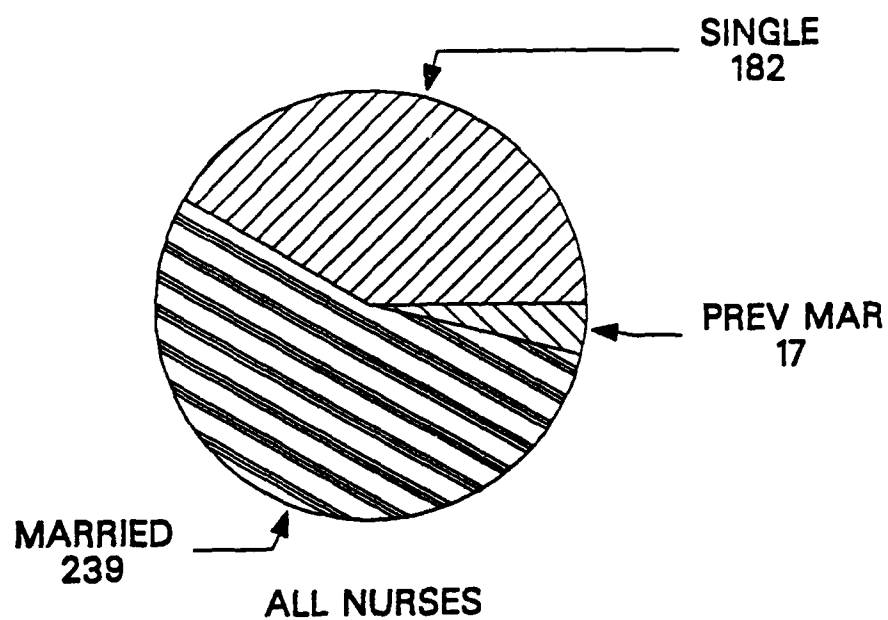


Figure 20  
Marital Status by Rank, USAR Nurse Losses, FY 1987

of USAR entrants had this many dependents. Figure 21 shows the mean number of dependents for USAR nurse accessions by rank.

TABLE 20  
Number of Dependents, not Including Member, USAR/ARNG  
Nurse Accessions and Losses, FY 1987  
(percent)

Number of Dependents	Accessions		Losses	
	USAR (n=1,052)	ARNG (n=105)	USAR (n=521)	ARNG (n=69)
0	42.0	13.1	38.5	30.5
1	20.5	20.0	17.3	23.2
2	18.9	12.4	15.8	2.9
3	11.7	16.2	17.7	18.8
4 or more	<u>6.9</u>	<u>33.3</u>	<u>10.7</u>	<u>24.6</u>
Total	100.0	100.0	100.0	100.0
Missing	(131)	(0)	(46)	(0)

USAR and ARNG losses who had no dependents comprised 38.5% and 30.5% of their respective Reserve components. Almost 25% of ARNG losses had four or more dependents, while this was the case for only 10.7% of USAR losses for FY 87. Figure 22 shows the mean number of dependents for USAR losses.

#### E. Race-Ethnic Status

The race-ethnic distribution of USAR/ARNG nurse accessions shown in Table 21 indicates that blacks were not as strongly represented among ARNG accessions as among USAR accessions. Blacks represented 15.1% of USAR accessions and only 7.6% of ARNG accessions. Hispanics comprised a similar proportion of USAR and ARNG accessions, 1.5% and 1.9%, respectively. Figure 23 shows the race-ethnic breakdown for USAR nurse accessions by rank.

The race-ethnic distribution for nurse losses shows that blacks repre-

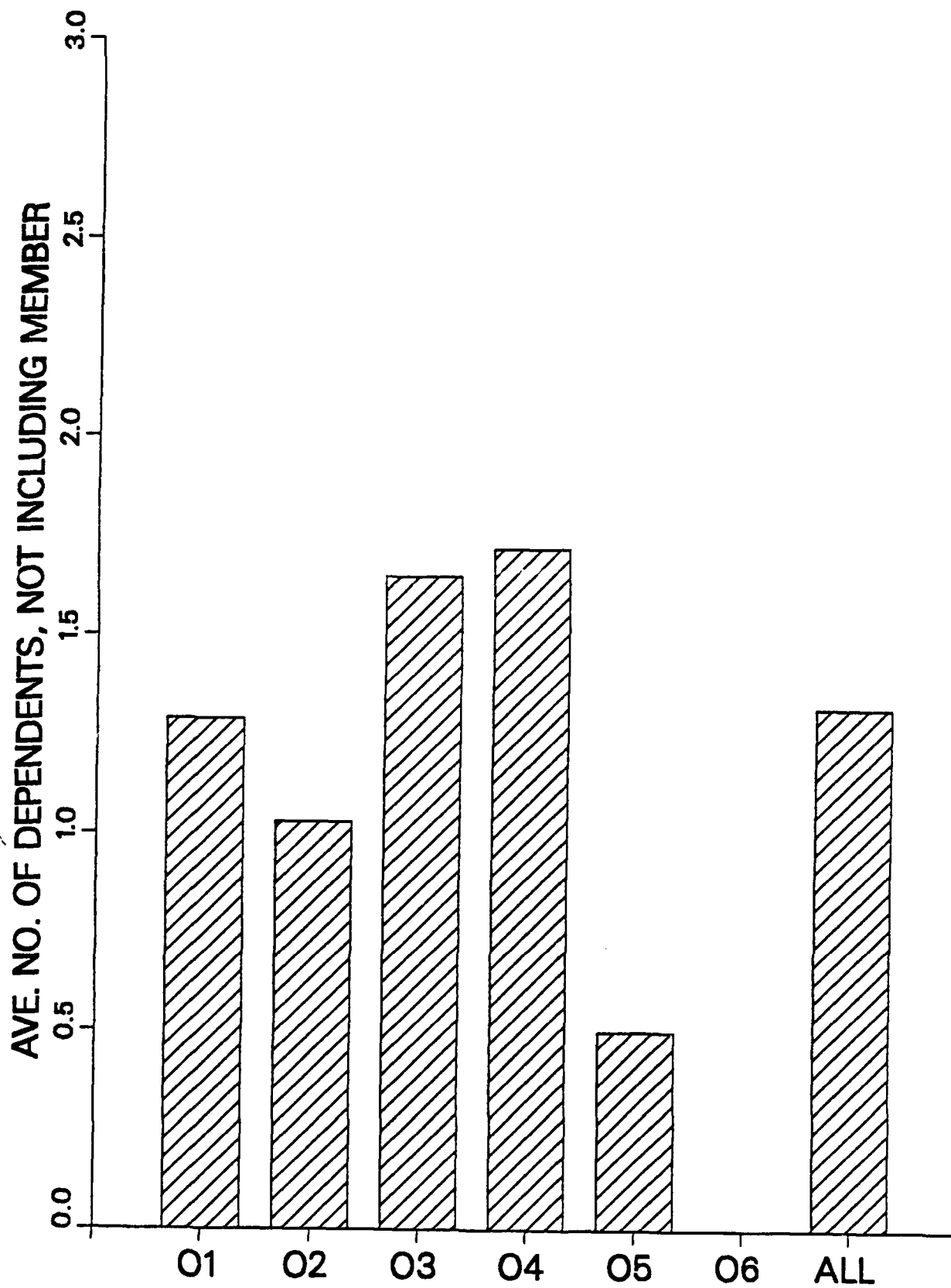


Figure 21

Average Number of Dependents by Rank, USAR Nurse Accessions, FY 1987

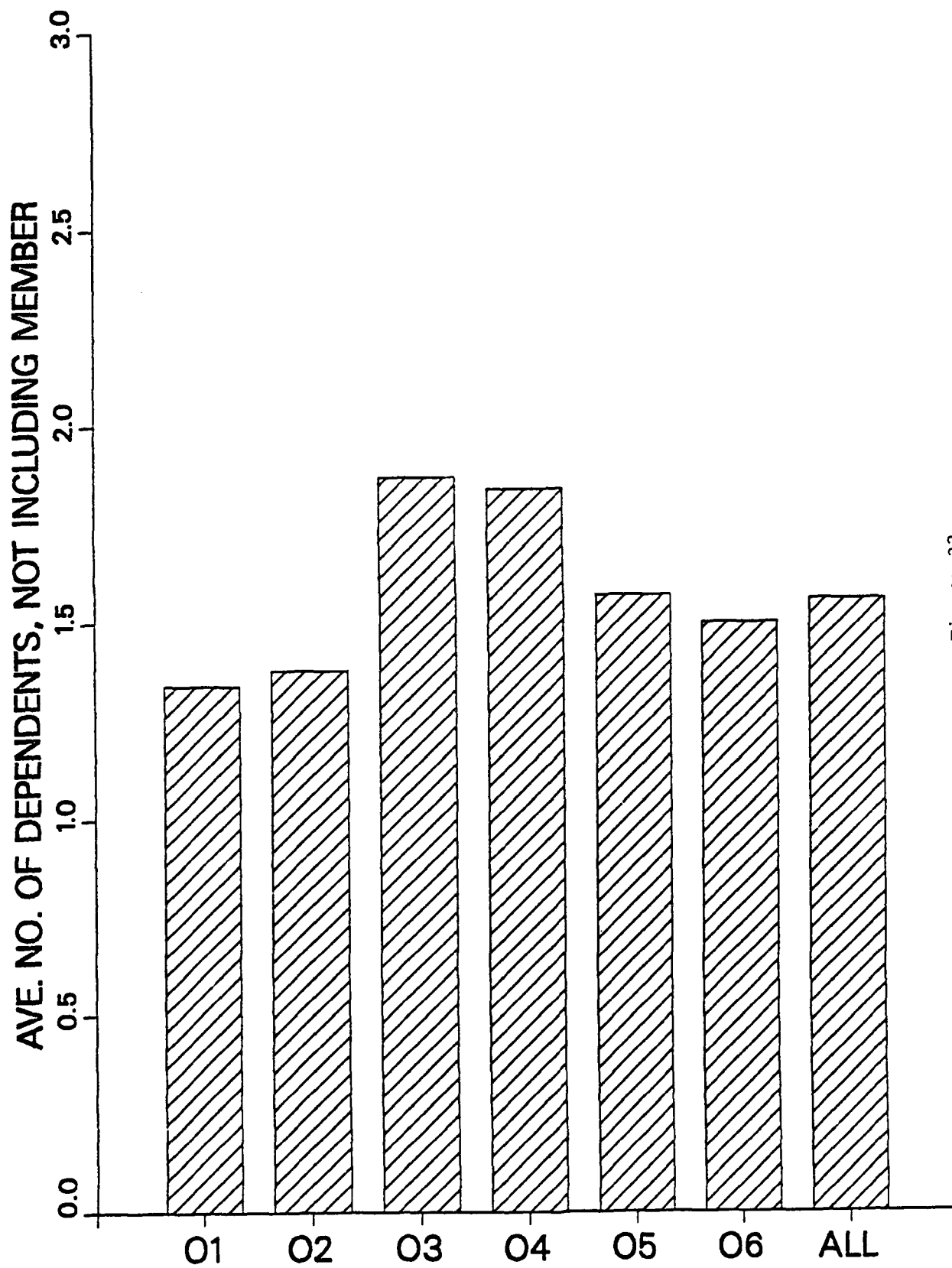


Figure 22

Average Number of Dependents by Rank, USAR Nurse Losses, FY 1987

sented 10.5% of USAR losses and 14.5% ARNG losses. Hispanics made up 7.2% of nurse losses to the ARNG, but only 1.6% of the USAR nurse losses.

Table 21

Race-Ethnic Group, USAR/ARNG Nurse Accessions and Losses, FY 1987  
(percent)

<u>Race-Ethnic Group</u>	<u>Accessions</u>		<u>Losses</u>	
	<u>USAR</u> <u>(n=1,052)</u>	<u>ARNG</u> <u>(n=105)</u>	<u>USAR</u> <u>(n=521)</u>	<u>ARNG</u> <u>(n=69)</u>
White	76.5	89.5	83.4	76.8
Black	15.1	7.6	10.5	14.5
Hispanic	1.5	1.9	1.6	7.3
Other	<u>6.9</u>	<u>1.0</u>	<u>4.5</u>	<u>1.4</u>
Total	100.0	100.0	100.0	100.0
Missing	(206)	(0)	(75)	(0)

Figure 24 shows the race-ethnic breakdown for USAR nurse losses by rank.

#### F. Highest Educational Level

Table 22 shows the distribution of highest educational level for USAR/ARNG accessions. Unfortunately, over three-fourths of the records for USAR nurse

TABLE 22

Highest Educational Level, USAR/ARNG Nurse Accessions and Losses, FY 1987  
(percent)

<u>Level</u>	<u>Accessions</u>		<u>Losses</u>	
	<u>USAR</u> <u>(n=1,052)</u>	<u>ARNG</u> <u>(n=105)</u>	<u>USAR</u> <u>(n=521)</u>	<u>ARNG</u> <u>(n=69)</u>
1st Year College Equiv.	2.3	1.0	0.3	3.0
Associate's Degree	35.2	32.0	17.1	40.9
Bachelor's Degree	58.2	52.6	67.6	42.5
Master's Degree	3.8	10.3	13.7	12.1
Doctorate	<u>.4</u>	<u>4.1</u>	<u>1.3</u>	<u>1.5</u>
Total	100.0	100.0	100.0	100.0
Missing	(791)	(8)	(222)	(3)

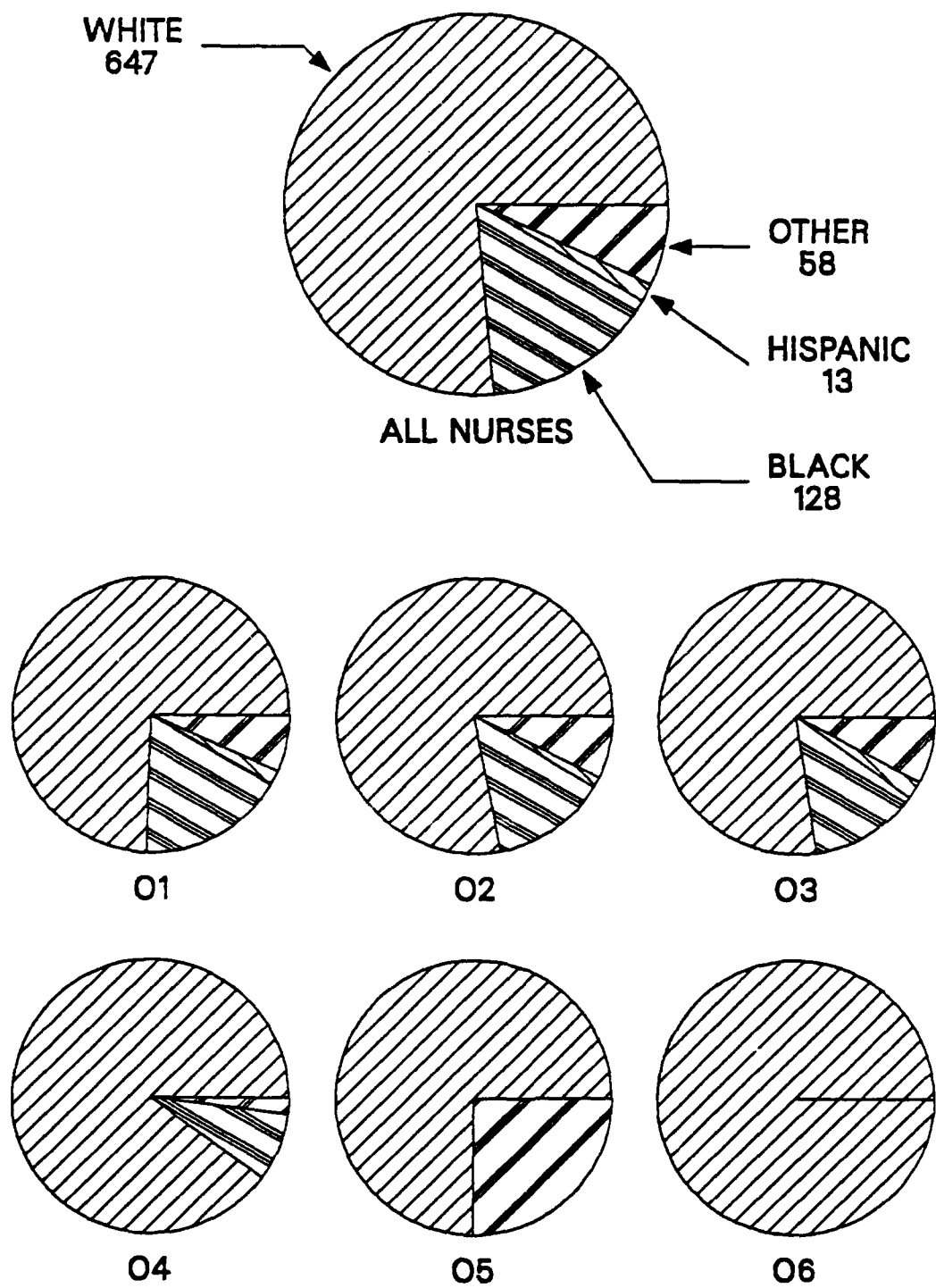


Figure 23

Race-Ethnic Group by Rank, USAR Nurse Accessions, FY 1987



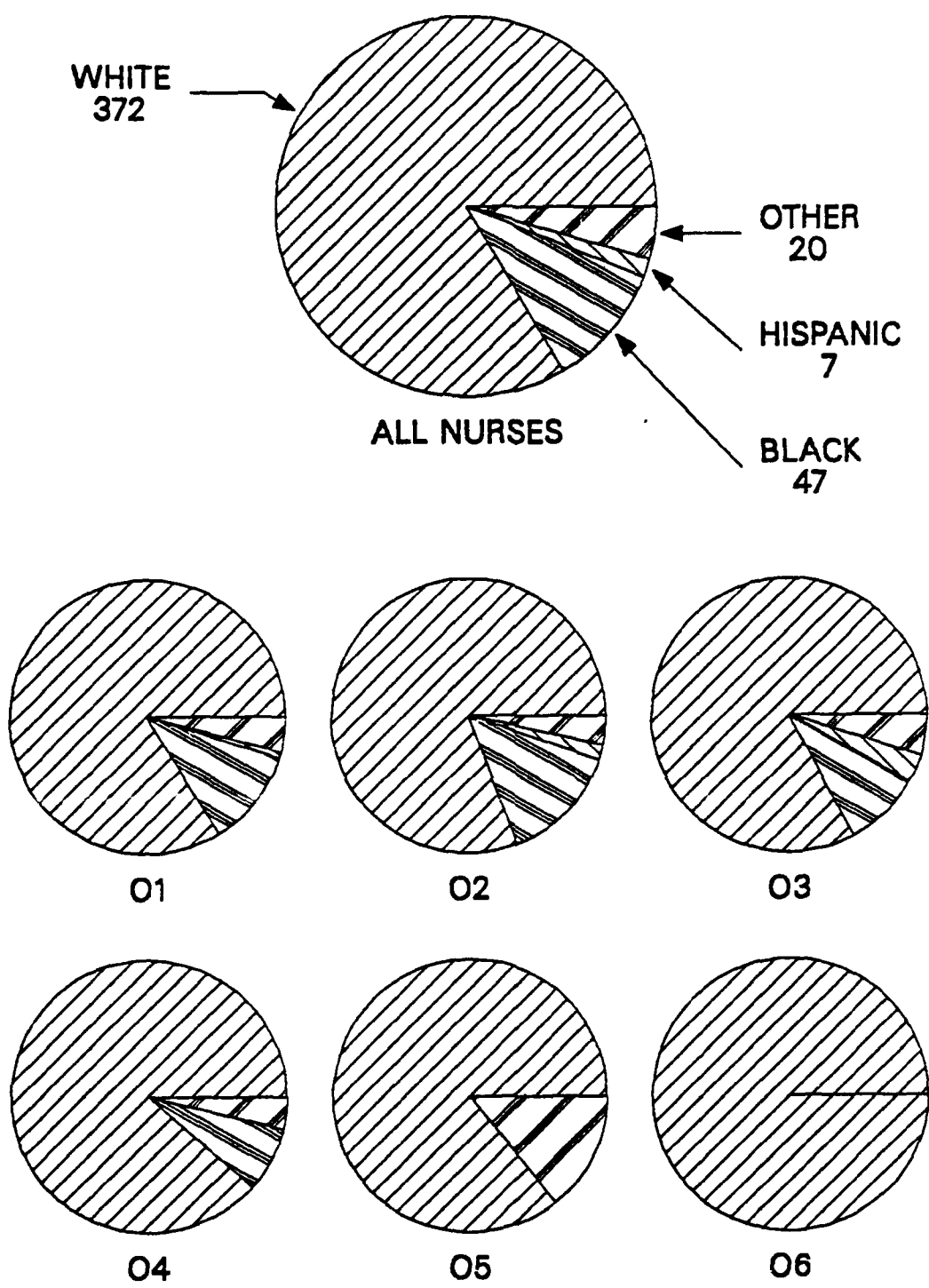


Figure 24

Race-Ethnic Group by Rank, USAR Nurse Losses, FY 1987

accessions did not have valid information on highest degree. Approximately two-thirds of both USAR and ARNG nurse accessions had at least a Bachelor's degree.

Only 17.4% of USAR nurse losses had less than a Bachelor's degree, compared with 43.9% of ARNG nurse losses.

#### G. Home of Record

Table 23 shows the distribution of USAR/ARNG nurse accessions for five recruiting regions of the country, based upon their home of record state. The largest number of accessions came from the North Central region for the USAR, as compared with Southeast region for the ARNG. Figure 25 shows the distribution of home of record region by rank for USAR nurse accessions.

Note the very high percentage of USAR nurse losses in the Northeast recruiting region (37.7%) compared to USAR nurse accessions in the Northeast (21.7%). (The nurse membership data set for this same period of time showed that 31.3% of USAR nurses and 20.0% of the ARNG nurses had homes of record in the Northeast recruiting region). Figure 26 shows the distribution of USAR nurse losses by region.

TABLE 23

Home of Record by Recruiting Region, USAR/ARNG Nurse Accessions and Losses,  
FY 1987  
(percent)

Region	Accessions		Losses	
	USAR (n=1,052)	ARNG (n=105)	USAR (n=521)	ARNG (n=69)
Northeast	21.7	18.1	37.7	18.6
Southeast	21.8	26.7	16.0	32.2
North Central	23.6	17.1	17.0	13.6
South Central	15.6	21.0	13.3	20.3
West	17.3	17.1	16.0	15.3
Total	100.0	100.0	100.0	100.0
Missing	(90)	(0)	(33)	(10)

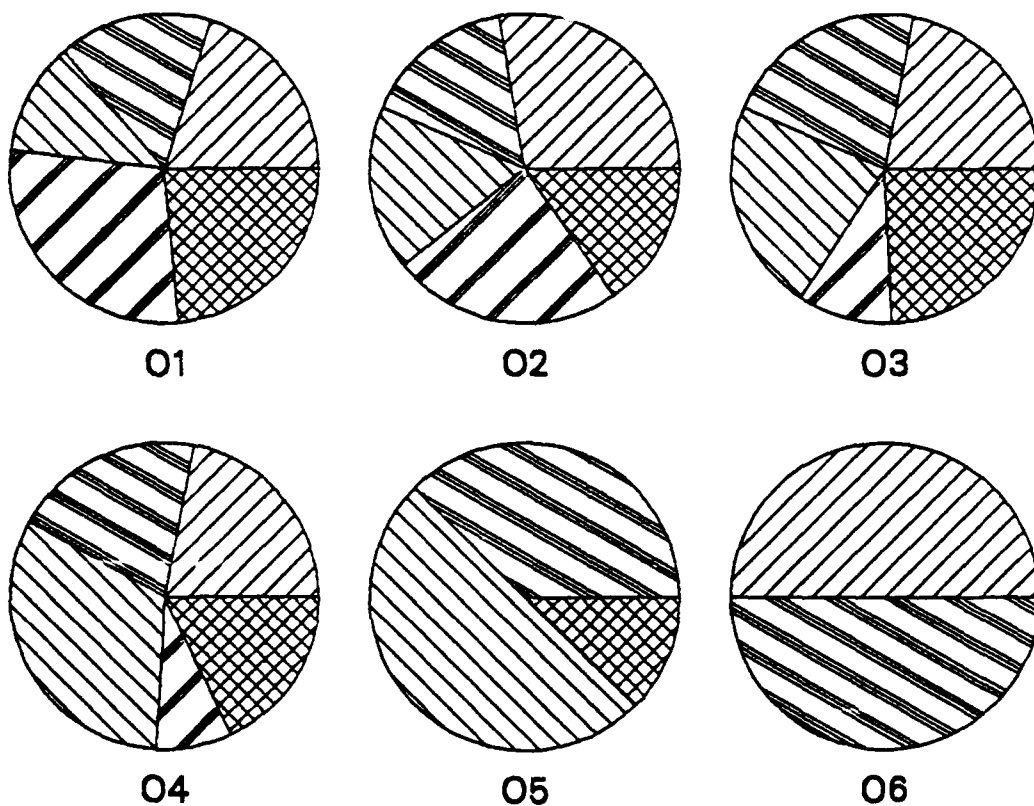
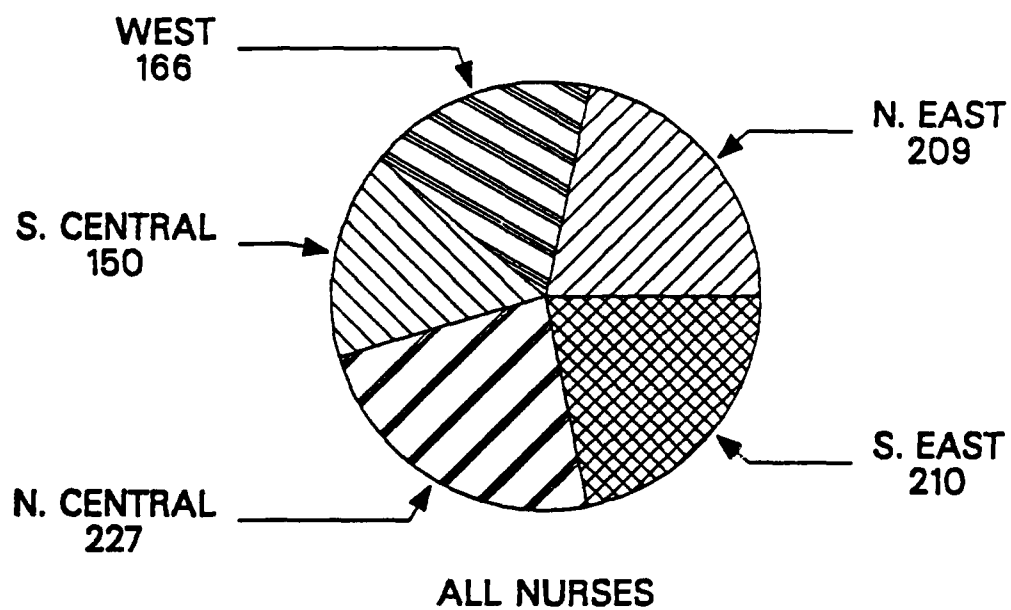


Figure 25

Home of Record by Recruiting Region and Rank, USAR Nurse Accessions, FY 1987

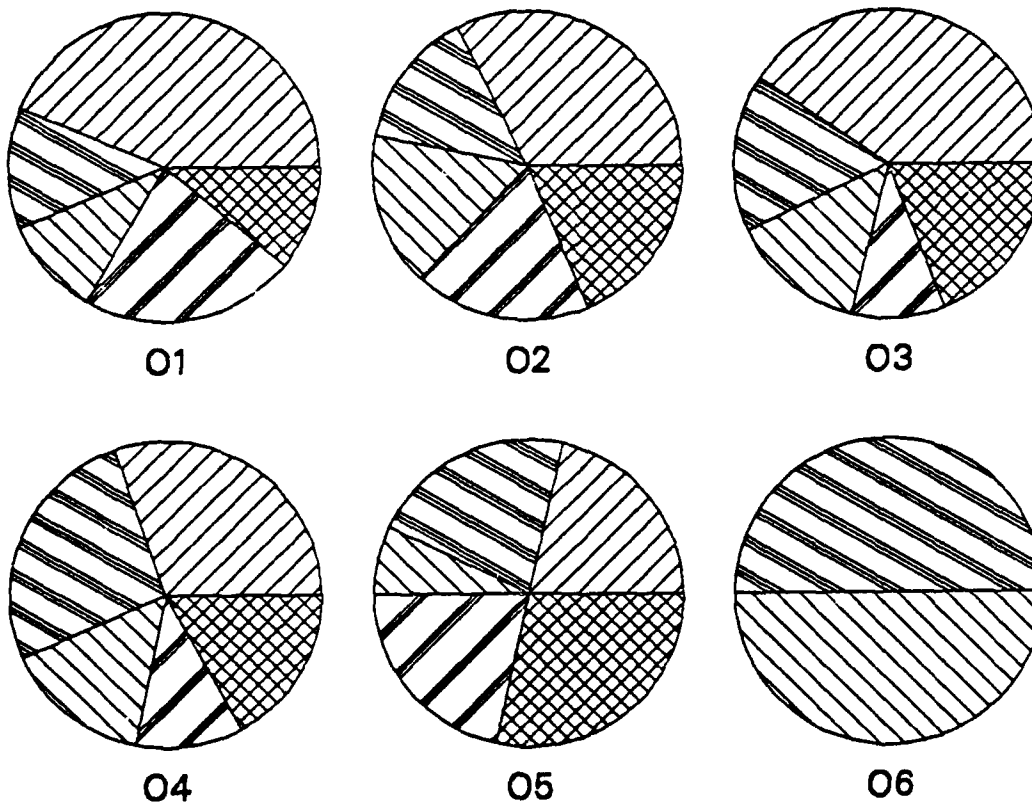
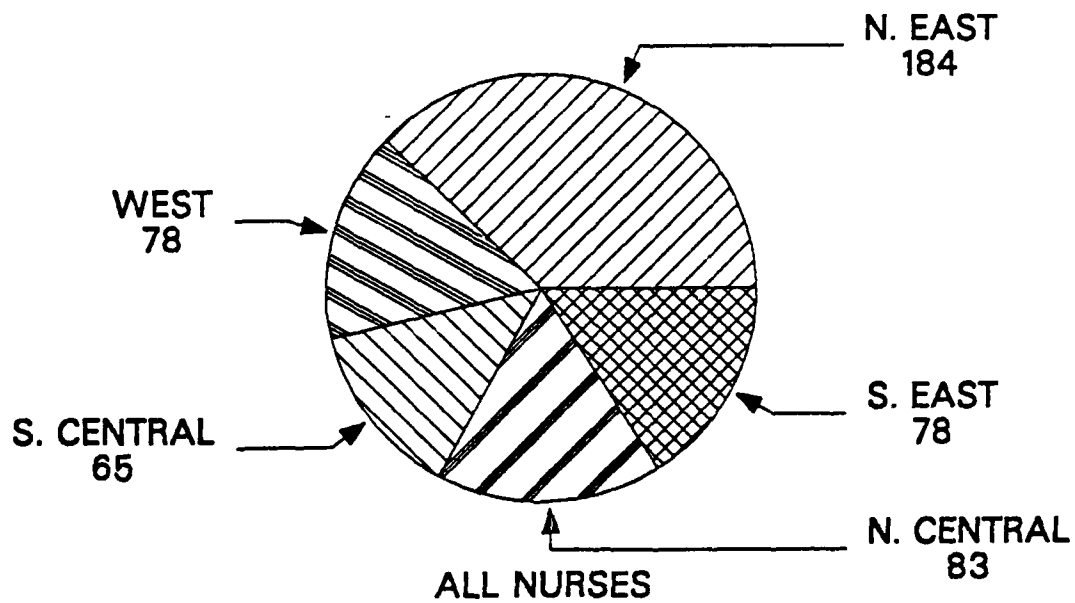


Figure 26

Home of Record by Recruiting Region and Rank, USAR Nurse Losses, FY 1987

## H. Rank

Table 24 shows the rank distribution for nurses who entered and those who left the USAR/ARNG during fiscal year 1987. Almost 62% of USAR accessions were Second Lieutenants, compared with 43.8% for the ARNG. The ARNG had a significantly higher entry rank level than the USAR, with 43.1% being Captains and above, compared with only 21.2% of USAR nurses.

The largest number of USAR losses were Second Lieutenants (37.1%). The ARNG losses were more senior than the USAR nurse losses with the largest number of ARNG losses having the rank of Captain.

TABLE 24

Rank, USAR/ARNG Nurse Accessions and Losses, FY 1987  
(percent)

Rank	Accessions		Losses	
	USAR (n=1,052)	ARNG (n=105)	USAR (n=521)	ARNG (n=69)
2LT	61.8	43.8	37.1	26.1
1LT	17.0	13.3	25.0	17.4
CPT	14.9	28.6	24.2	36.2
MAJ	5.3	13.3	10.6	15.9
LTC	0.8	1.0	2.7	2.9
COL	0.2	0.0	0.4	1.4
Total	100.0	100.0	100.0	100.0
Missing	(0)	(0)	(0)	(0)

## I. Source of Commission

The distribution of commissioning source for the USAR/ARNG nurse accessions and losses is shown in Table 25. Nearly 95% of USAR and 85% of ARNG entering nurses obtained their commissions through direct appointment. Losses to both Reserve components were similarly dominated by direct commissionees.

TABLE 25

Source of Commission, USAR/ARNG Nurse Accessions and Losses, FY 1987  
(percent)

<u>Source</u>	<u>Accessions</u>		<u>Losses</u>	
	<u>USAR</u> <u>(n=1,052)</u>	<u>ARNG</u> <u>(n=105)</u>	<u>USAR</u> <u>(n=521)</u>	<u>ARNG</u> <u>(n=69)</u>
West Point	0.2	0.0	0.0	0.0
ROTC Scholarship	0.3	1.0	0.0	0.0
ROTC Non-schsp	3.3	4.8	2.6	1.5
Direct Appt.	94.6	84.8	94.5	95.5
Other	<u>1.6</u>	<u>9.5</u>	<u>2.9</u>	<u>3.0</u>
Total	100.0	100.0	100.0	100.0
Missing	(388)	(0)	(105)	(2)

#### J. Geographic Distribution

The geographic distribution of the location of the units of assignment of Reserve nurse accessions and losses during FY 87, by recruiting region, is given in Table 26. The most striking relationship is the high losses and low accessions in the Northeast for the USAR. Figures 27 and 28 show unit assignment region by rank for accessions and losses, respectively.

Table 26

Region of Unit of Assignment, USAR/ARNG Nurse Accessions and Losses, FY 1987  
(percent)

<u>Region</u>	<u>Accessions</u>		<u>Losses</u>	
	<u>USAR</u> <u>(n=1,052)</u>	<u>ARNG</u> <u>(n=105)</u>	<u>USAR</u> <u>(n=521)</u>	<u>ARNG</u> <u>(n=69)</u>
Northeast	21.6	21.9	40.4	23.4
Southeast	21.0	24.7	14.0	29.7
North Central	22.3	13.7	16.3	15.6
South Central	17.8	21.9	13.5	18.8
West	<u>17.3</u>	<u>17.8</u>	<u>15.8</u>	<u>12.5</u>
Total	100.0	100.0	100.0	100.0
Missing	(9)	(32)	(1)	(5)

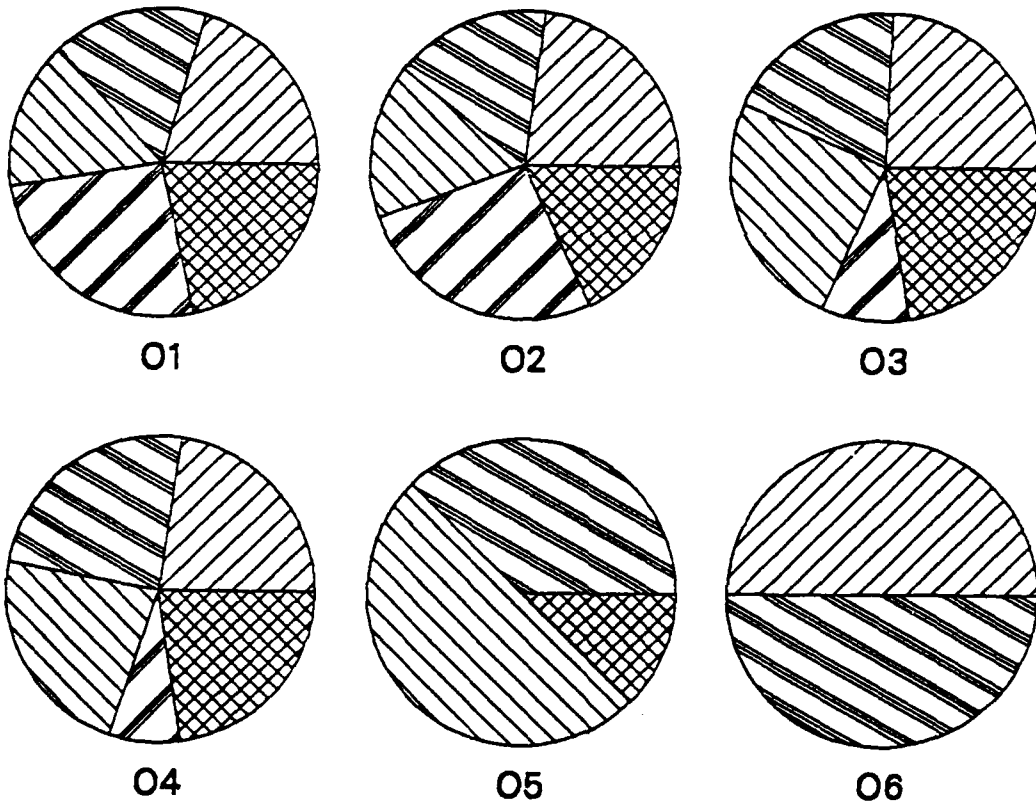
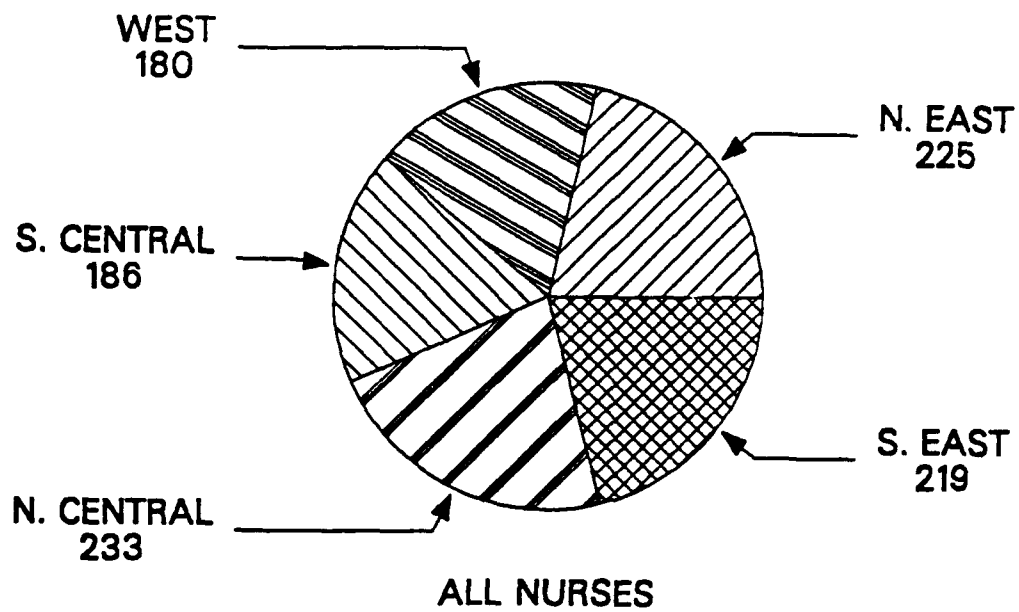


Figure 27

Unit of Assignment by Recruiting Region and Rank, USAR Nurse Accessions, FY 1987

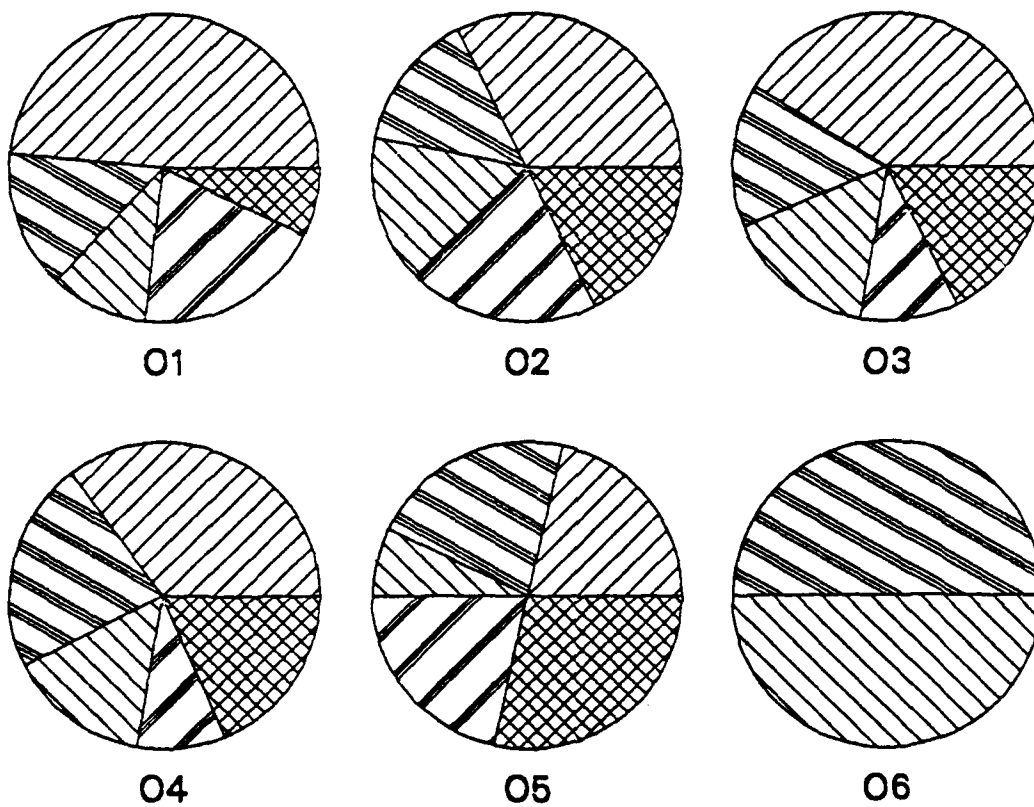
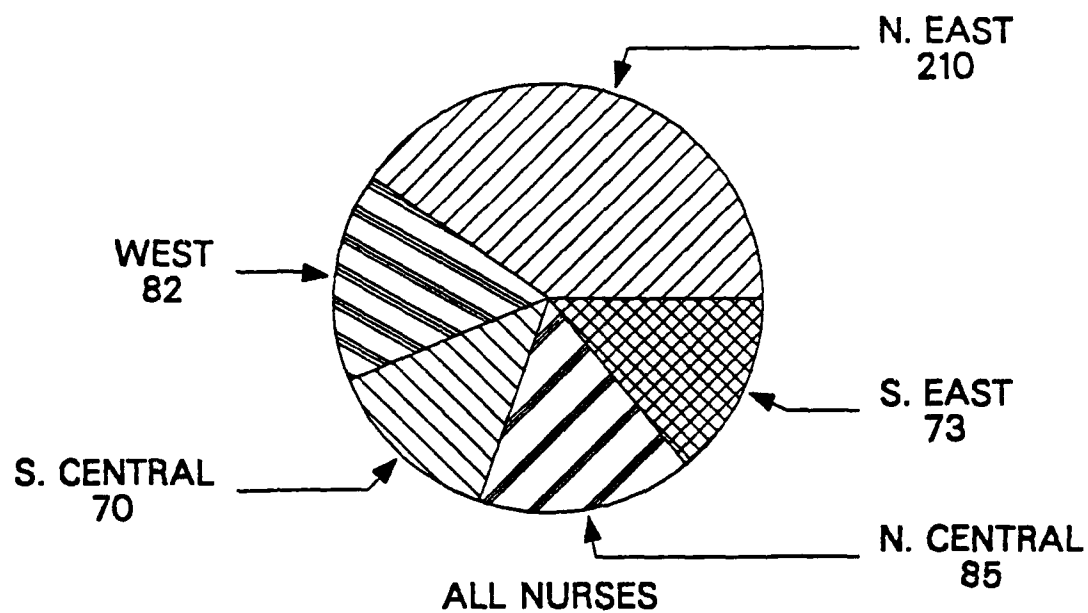


Figure 28

Unit of Assignment by Recruiting Region and Rank, USAR Nurse Losses, FY 1987



## K. Training Category

For both the USAR and ARNG nurse accessions, 99.9% were listed as being assigned to troop program units (TPUs). Almost all of Reserve nurse losses were also assigned to TPUs, 98.8% for the USAR and 95.7% for the ARNG.

## L. Military Education

Table 27 shows the highest level of military education achieved by the USAR/ARNG nurse accessions and losses. Only a few entering USAR nurses (2.1%) had completed any of the service school programs which is not surprising for new entrants. However, 45.5% of ARNG nurse accessions had completed at least one of the service school programs.

Over 56% of USAR and 38.9% of ARNG nurse losses had no military education. The highest level of military schooling for those with some training was Initial Skill School (30.9%) for USAR nurse losses and Skill Progression School (30.6%) for ARNG nurse losses. Almost one-half (33) of the records for ARNG nurse losses were missing information on military education.

TABLE 27

Highest Level of Military Education,  
USAR/ARNG Nurse Accessions and Losses, FY 1987  
(percent)

Level	Accessions		Losses	
	USAR (n=1,052)	ARNG (n=105)	USAR (n=521)	ARNG (n=69)
Senior Service School	0.0	0.0	0.0	0.0
Intermediate Svc School	0.0	2.0	3.5	2.8
Skill Progression Sch.	1.4	14.9	9.2	30.6
Initial Skill School	0.7	28.7	30.9	27.8
None	97.9	54.5	56.4	38.9
Total	100.0	100.0	100.0	100.0
Missing	(0)	(4)	(0)	(33)

#### M. Retirement Points

As with USAR and ARNG nurse membership, the data fields for retirement points for accessions and losses did not contain a sufficient proportion of valid entries for analysis.

#### N. Nursing Specialty

The data set contained information about specific nursing specialty in the form of duty MOS and primary MOS. Table 28 shows the numbers of Reserve nurses in each of the nursing specialties (primary MOS). Almost 60% of USAR and over 70% of ARNG nurse accessions were medical-surgical nurses. The majority of USAR (53.4%) and ARNG (69.6%) nurses exiting the Reserves were also medical-surgical nurses. Figures 29 and 30 illustrate the distribution of nursing specialty by rank for nurse accessions and losses, respectively.

TABLE 28

Nursing Specialty, USAR/ARNG Nurse Accession and Losses, FY 1987  
(Percent)

<u>Specialty (Primary MOS)</u>	<u>Accessions</u>		<u>Losses</u>	
	<u>USAR</u> <u>(n=1,052)</u>	<u>ARNG</u> <u>(n=105)</u>	<u>USAR</u> <u>(n=521)</u>	<u>ARNG</u> <u>(n=69)</u>
66A Administrator	0.6	4.7	1.0	4.4
66B Community Health	0.6	1.0	0.6	0.0
66C Psychiatric	4.6	1.9	6.0	0.0
66D Pediatrics	2.1	0.0	2.5	0.0
66E Operating Room	7.4	6.7	9.8	7.3
66F Nurse Anesthetist	4.1	9.4	5.2	7.3
66G ObGyn	3.2	1.0	2.1	0.0
66H Medical-Surgical	59.9	70.5	53.4	69.6
66J Clinical	17.5	4.8	19.6	11.6
Other	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total	100.0	100.0	100.0	100.0
Missing	(45)	(0)	(0)	(0)

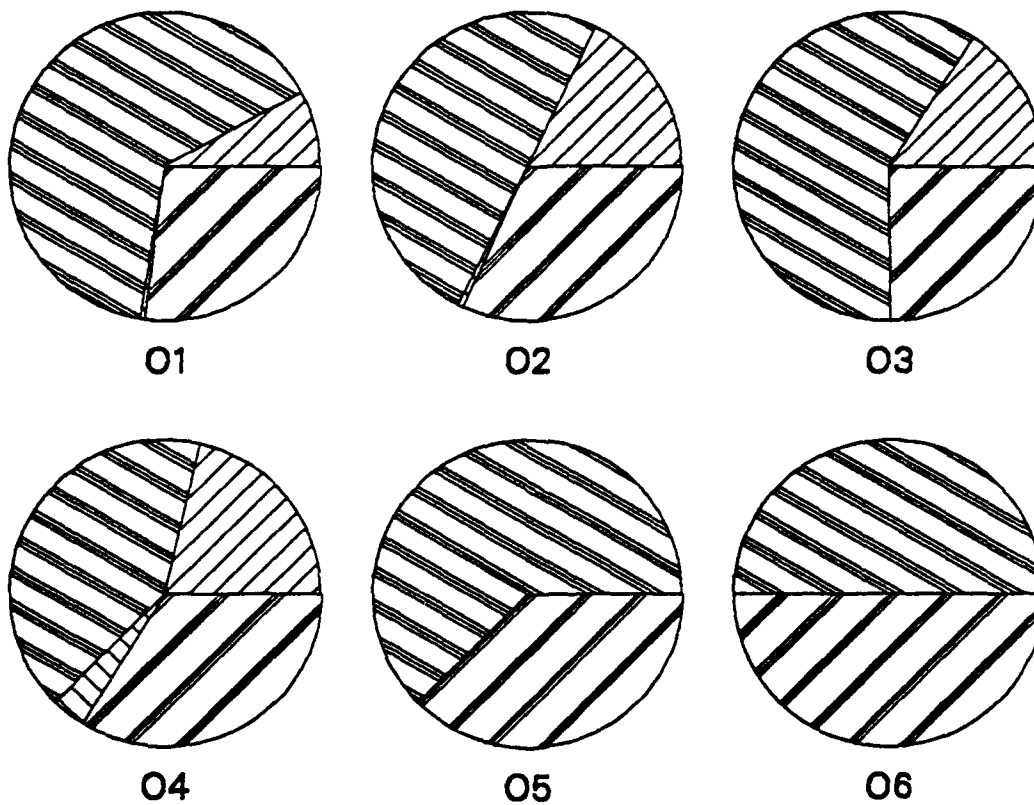
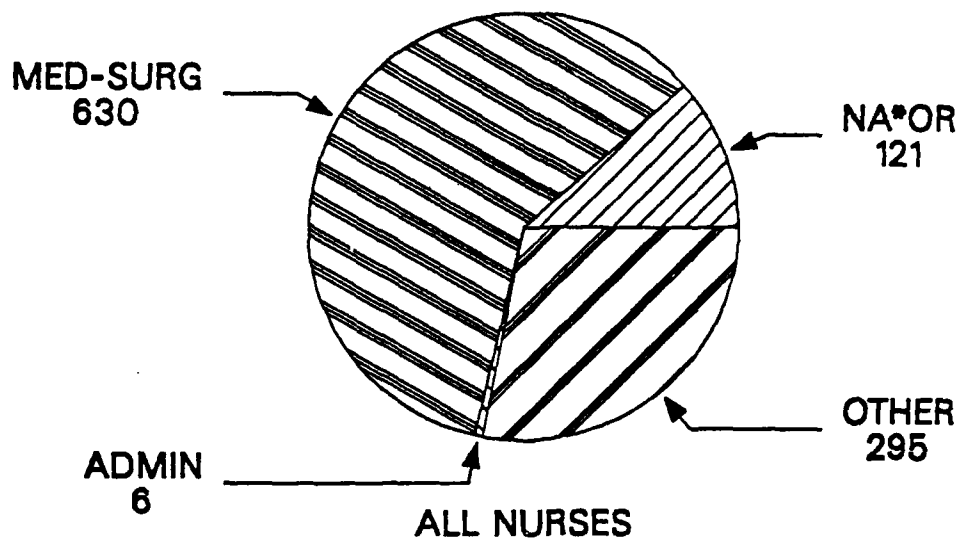


Figure 29

Nursing Specialty by Rank, USAR Nurse Accessions, FY 1987

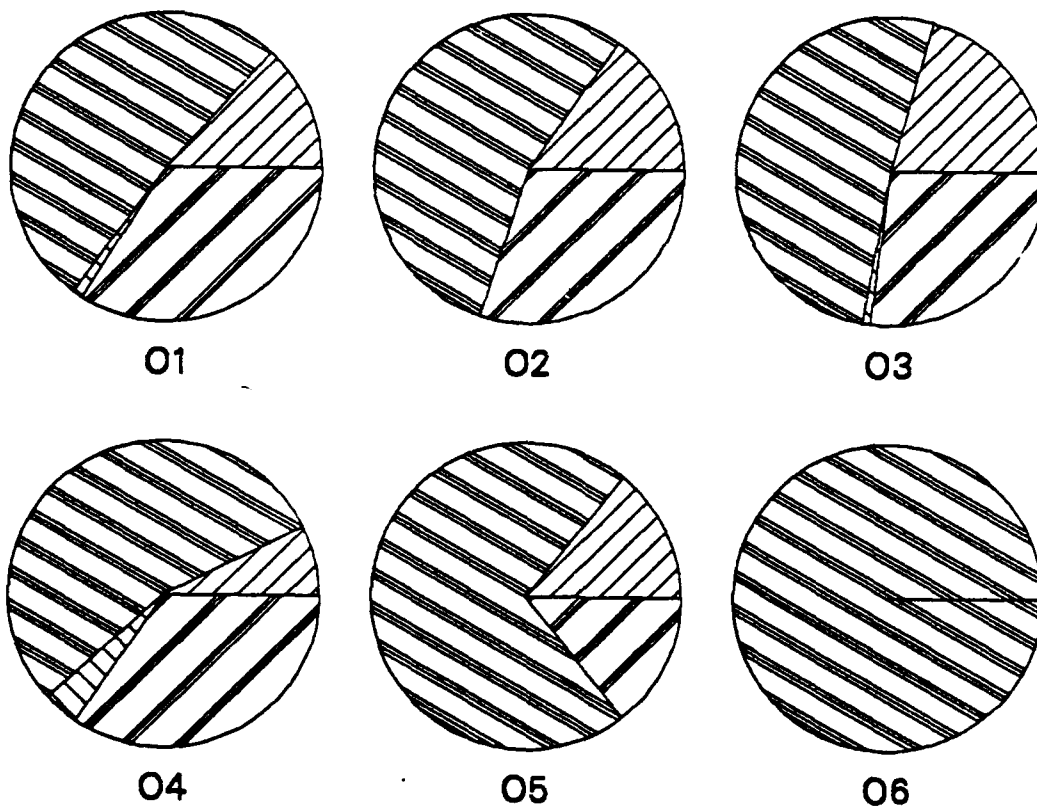
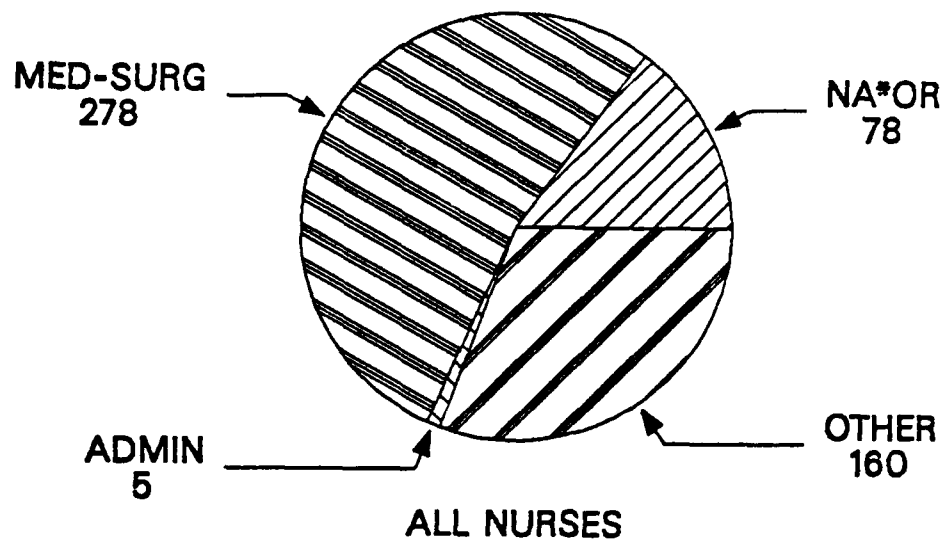


Figure 30

Nursing Specialty by Rank, USAR Nurse Losses, FY 1987

## V. SUMMARY AND CONCLUSIONS

### A. Comparison of USAR and ARNG Membership, Accessions, and Losses

The distinct character of each of the two Reserve components profiled in this study is revealed by a comparison of the demographic and military experience data derived from DMDC personnel records for FY 1987. The availability of accession and loss files for this same period provides a unique opportunity to observe changes in the composition of the membership of these components which may represent important trends.

#### 1. Age

There was a surprising degree of age compression among USAR and ARNG nurses in this data set. The average age for the membership as a whole for both the Selected Reserve and the National Guard did not differ greatly from that of the accessions to the respective components and all of the age distributions were concentrated over fairly narrow ranges. This may be explained by an increase in age at entry over the past two decades, such as has been experienced by Army Nurse Corps members serving on Active Duty (Kocher and Thomas, 1988). USAR members were slightly older than either accessions or losses (37.5 versus 33.3 and 35.7 years). National Guard nurses were older (38.3 years) than USAR nurses and this was also true for accessions and losses to the ARNG (35.1 and 37.4 years, respectively).

Civilian nurses had a similar mean age (about 39 years) but there were more nurses at the extremes of the age distribution among this civilian population.

#### 2. Gender

Nurse members of the Selected Reserve were 77% female, a lower

percentage than among the total population of registered nurses which was about 97% female in 1984 (US Department of Health & Human Services, 1986). Accessions to the USAR were very similar to members at 76% female but losses were more likely to be male (73.8% female).

The gender distribution was quite different for the National Guard. Only 68.2% of ARNG members were female (9% lower than for the USAR). Accessions were even more dissimilar with just over half of the entering nurses being female (54.3%). Guard losses, on the other hand, were more likely to be female (72.5%). This pattern, if it is consistent from year to year, would indicate a change in the gender composition of the ARNG in the future, one that would lead to more nearly equal proportions of men and women nurses.

### 3. Marital Status and Dependents

About half of all USAR nurses were married in FY 1987 (55%). Accessions and losses from the Selected Reserve showed almost the same marital status distribution (54% and 54.6% married, respectively) as the membership.

Members of the Army National Guard were more likely to be married (63%) than members of the Selected Reserve. Two-thirds (66.7%) of ARNG accessions were married while only 59.4% of ARNG losses were married. The slightly older average age for the Guard may explain some of this difference. If these accession and loss data are indicators of a continuing pattern, the ARNG is becoming a more "married" component.

The data field used to construct the distributions for number of dependents in this study included all dependents, except for the service member. Spouses are included in most instances. Nurse members of dual military couples would not have a spouse counted as a dependent for this item. If spouses could be identified and separated from other dependents, a more interesting indicator

of family configuration could be constructed.

#### 4. Race/Ethnic Group

Nurses of Hispanic origin made up 2.1% of USAR membership in FY 1987. The representation of Hispanics among accessions and losses from the Selected Reserve was similar (1.5% and 1.6%, respectively). Among the Guard nurse membership, Hispanics were more strongly represented (5.3%) than among the USAR. National Guard accessions, however, were only 1.9% Hispanic, while losses were a much greater 7.2% Hispanic. Both the USAR and the ARNG had a greater percent of Hispanics among their membership than was found among employed civilian nurses (1.6%).

Black nurses were more strongly represented among the Selected Reserve than among the National Guard (17.1% versus 8.0%). USAR accessions were 15.1% black and losses were only 10.5% black. The Guard accessed only 7.6% blacks but almost twice that percentage (14.5%) of the ARNG losses were black. The membership of both Reserve components included substantially more Blacks than the employed civilian nursing sector (4.6%).

If the 1987 accession and loss data represent a trend in minority race/ethnic group representation, blacks are increasing their Selected Reserve participation but decreasing their participation in the Guard. Hispanics appear to be maintaining their level of USAR activity while decreasing participation in the Guard.

#### 5. Education

The educational level of nurse members of the Selected Reserve and National Guard was very high. About 33% of employed civilian nurses held a Bachelor's or higher degree while this proportion was 78% for USAR nurses and 71% for ARNG nurses. A Bachelor's degree was the highest degree for 57.3% and over



20% held a Master's degree or a Ph.D degree. USAR nurse accessions were slightly more likely than members to hold a Bachelor's degree as their highest degree (58.2) and less likely to hold more advanced degrees.

National Guard nurses were similarly educated in comparison to USAR nurses (56.3%, 12.6%, and 2.0% for Bachelor's , Master's, and Ph.D degrees, respectively). Both accessions and losses from the ARNG were less likely than the total membership to hold a Bachelor's degree (52.6% and 42.5%) or a Master's degree (10.3% and 12.1%) as their highest degree.

#### 6. Home Region

USAR members were most likely to come from the Southeast (26.7%), while accessions were most frequently from the North Central region (23.6%), and losses from the Northeast (37.3%). For the ARNG, members came most often from the Southeast (26.7%), as did both accessions (26.7%) and losses (32.2%).

If this pattern of accessions and losses gives a true picture of trends for these components, the USAR appears to be experiencing a change in regional origin, while the ARNG seems to maintaining a particularly strong attraction for Southerners. The discussion of region of assignment location, below, presents another aspect of geographic distribution.

#### 7. Rank

The paygrade distribution for nurse members of the USAR shows about the same percentage of Captains and Majors (46.7%) as Lieutenants (44.1%). The lower ranks were more heavily represented among accessions (78.8% were Lieutenants) and among losses (62.1% were Lieutenants).

ARNG members were more likely than USAR members to be Captains or Majors (58.7%) rather than Lieutenants (31.1%). The majority (57.1%) of accessions were Lieutenants and the majority (52.1%) of National Guard losses

were Captains or Majors.

#### 8. Source of Commission

Almost all of both the USAR (95.2%) and ARNG (92.9%) membership had received their commissions by direct appointment. National Guard accessions were only 84.8% direct commissionees, the lowest percentage for any of the membership, accession, or loss groups.

#### 9. Region of Assignment

The largest number of USAR nurses were serving in the Northeast region (32.6%) and the smallest number in the West (15.6%). Accessions to the Selected Reserve served most often in the North Central region (22.3%) and least often in the West (17.3%). USAR losses were predominantly from TPUs in the Northeast (40.4%) and least often from the South Central region (13.5%). The USAR would appear to be moving from a concentration of membership in the Northeast to a more even distribution across the nation, if this FY 1987 information represents a continuing pattern. It is unclear if this shift represents a change in location of medical units or a recruiting/attrition phenomenon.

The geographic distribution of TPU locations for ARNG nurses differed from that of the USAR. Members most commonly served in the Southeast (26.1%) and least commonly in the West (13.7%). The Southeast was also the most common assignment location for accessions to and losses from the National Guard (24.7% and 29.7%, respectively). The West was the least common location for losses (12.5%) as was the North Central region for accessions (13.7%). The National Guard would appear to be moving, to a limited degree, away from a slight concentration in the Southeast and increasing representation in other regions, particularly the West.

#### 10. Military Education

Although military education information was missing from many of the records for these nurse officers, a pattern emerges which indicates that for both the Selected Reserve and the Guard, the most common highest level of military education was Initial Skill School (37.5% and 39.6%, respectively). A very few USAR nurses had completed Senior Service schooling (.1%) and only 5.8% of Selected Reserve nurses and 8.6% of National Guard nurses had completed Intermediate Service schooling.

#### 11. Length of Service

The average years of satisfactory service completed for USAR members was 5.5 years and for ARNG members was 9.1 years. Accessions and losses, for both components, had a lower average value for good years toward retirement. Some questions of data quality were apparent in connection with tenure indicators. Nurse officers in the upper paygrades in many cases had records which showed zero or very low values for these measures and those in the lowest ranks sometimes had unexpectedly large values for these same measures.

#### 12. Nursing Specialty

The majority of nurses serving in the USAR and the ARNG were medical-surgical nurses (60.0% and 68.6%, respectively). Operating room nurses comprised 8.5% of Selected Reserve nurses and 11.4% of National Guard nurses. Nurse anesthetists made up 4.6% of USAR nurses and 5.4% of ARNG nurses. These two specialties are used extensively in military medical settings and their numbers are very limited. Reserve accessions showed a lower percentage of these specialties ( 7.4% for operating room nurses and 4.1% for nurse anesthetists) than the membership as a whole but losses showed a higher percentage (9.8% and 5.2%, respectively). Guard accessions included a larger percentage of nurse

anesthetists (9.5%) and a lower percentage of operating room nurses (6.7%) than the overall membership.

For the USAR the FY 1987 data reflect the difficulty of attracting and retaining nurses in these key specialties. The Guard, however, assessed more of these personnel than they lost in the same period.

## B. Summary Profiles

Descriptions of a typical individual nurse serving in the Selected Reserve or National Guard were constructed as a means of summarizing the statistics presented in Chapters III and IV. Summary profiles were also developed for accessions and losses to each of the components.

### 1. USAR Selected Reserve Nurses

#### a. USAR Member

A typical Selected Reserve nurse was a white, 38 year old, married, female Captain or Major. Her home of record was in the Southeast but she was serving with a TPU in the Northeast. She held a Bachelor's degree as her highest degree and, if she had completed any military schooling, it was Initial Skill School. This USAR member had received her commission by direct appointment and her occupational specialty was medical-surgical nurse.

#### b. USAR Accession

This entering officer was female, white, and married. Her paygrade at entry was Lieutenant (01 or 02) and she had received her commission by direct appointment. Her home region was the Southeast and she was also serving with a unit in the same region. A Bachelor's degree was her highest degree and she had not completed any military schooling. She was a medical-surgical nurse.

c. USAR Loss

This exiting nurse was a 36 year old, white, female, married Lieutenant who had served with a TPU in the Southeast and whose home of record was in this same region. She was a direct commissionee who, if she had completed any military schooling, had finished Initial Skill School. Her MOS indicated that she was a medical-surgical nurse.

2. ARNG Nurses

a. An ARNG nurse member

This typical National Guard nurse was 38 years old, white, female, married and held the rank of Captain or Major. The Southeast was the location of her home of record and also of the TPU to which she was assigned. A Bachelor's degree was her highest degree and Initial Skill School was her highest level of military education. She was a medical surgical nurse with (if she had a positive value for this tenure measure) 9.1 good years toward retirement. She had received her commission by direct appointment.

b. ARNG Accession

This new entrant was almost as likely to be male as female, the only profiled nurse for which this was the case (45.7% of these accessions were male). This nurse was married, white, and 35 years old. A Bachelor's degree was the highest educational level attained and Initial Skill School the most advanced military schooling completed. The MOS for this prototypical accession was medical-surgical nurse.

c. ARNG Loss

A typical nurse leaving the National Guard in FY 1987 was female, white, and married. Her rank was Captain or Major and she had received her commission by direct appointment. She was about equally likely to hold an

Associate's degree as a Bachelor's degree. Her home of record and the TPU with which she drilled were both in the Southeastern region. Skill Progression School was her highest level of military education (if she had completed any military schooling). Medical-surgical nursing was her specialty.

## C. Recommendations

### 1. Data Needs

The quality and scope of the personnel data available for USAR and ARNG nurses are inadequate for the development of a comprehensive view of these essential health care professionals. Many data fields are characterized by missing or inconsistent entries (retirement points, total Active federal military service, military education, zip codes, etc.). More complete and accurate information could provide a basis for innovations in recruiting and retention policy directed at the market for registered nurses.

Zip code data for residence and unit location, for example, would be very useful for local market studies. More extensive information on prior Active service characteristics would also be helpful for market segmentation research. In addition, family configuration data would aid recruiters as well as policy makers concerned with retention.

### 2. Related Studies

This report is one of a series of studies of the Army Nurse Corps undertaken for the US Army Recruiting Command. A companion report to this study will contain profiles of Active Duty nurse membership, losses, and accessions based on DoD personnel files.

Survey data have been used to investigate the Reserve intentions of Active Duty Army nurses (Kocher, Thomas, 1988) and data from the 1986 Reserve

Components Survey will be the basis for a report on the determinants of the military career plans of Army Reserve nurses. A recently conducted survey of Army Reserve nurses (Miller, 1987) will be analyzed to identify demographic, attitudinal, and working-conditions related factors influencing retention.

An extensive listing of references, Recruiting and Retaining Army Nurses: An Annotated Bibliography (Roberts, Kocher, 1988), provides a broad perspective on the labor market for registered nurses with an emphasis on the factors influential in attracting and retaining Army nurses.

#### REFERENCES

- Aiken, L. and Mullinix, C. Special Report: The Nurse Shortage - Myth or Reality? New England Journal of Medicine, 317(10), 1987, 641-646.
- American Health Care Association. Annual Membership Survey, 1987.
- American Hospital Association. Report of the 1986 Hospital Nursing Supply Survey. Chicago, IL. 1987.
- American Hospital Association. Report of the Hospital Nursing Personnel Survey 1987, by A. Minnick and W. B. Young. AHA Catalog No. 154752.
- American Nurses' Association. Facts About Nursing, 1987
- American Nurses' Association. Report on the Demand for Nursing Services and Supply of Nurses. Kansas City, Mo. 1988.
- American Organization of Nurse Executives. National Survey of Hospital Nursing Personnel, 1986, 1987.
- Annual Report of the Reserve Forces Policy Board, Fiscal Year 1986, Office of the Secretary of Defense, Washington, D.C.
- Astin, A., Green, K. and Korn, W. The American Freshmen: Twenty Year Trends, 1966-1985. Los Angeles, CA: University of California, The Higher Education Research Institute, Graduate School Of Education. 1987.
- Bassett, Ginger. Defense Manpower Data Center, Monterey, CA. Interview. 14 November 1988.
- Beary, J. Department of Defense Report. Military Medicine, 147 (11), 1982, 943-944.
- Binkin, M. America's Volunteer Military. Progress and Prospects. Washington, D.C., The Brookings Institute, 1984.
- Buerhaus, P. Not Just Another Nursing Shortage. Nursing Economics, 5(6), 1987, 267-279.
- Bureau of Labor Statistics. Industry Wage Survey: Nursing and Personal Care Facilities, September 1985. (Bull. 2275). 1987, Washington, D.C.
- Eisenstadt, Steven, "Money, Nurse Shortages Deal Hospitals a One-Two Punch," Army Times, March 28, 1988, (48-#33), pp. 1, 8.
- Fox, D.M. Comment on Mark S. Thompson and Heidi J. Meyer - What are the Costs of AIDS: Alternative Methodological Approaches. Presented at Conference on Health Services Research Methodology: Focus on AIDS, Tucson, Arizona, 1988.
- Fox, J. Wartime Nursing Supply not Adequate. U.S. Medicine, 18, (22), 1982, 4-22.



French, Diana G. "An Investigation of the Beliefs of Registered Nurses Towards Service in the Army Nurse Corps, Reserves." Unpublished Doctoral Dissertation, The University of Toledo, 1986.

Fullerton, H. Labor Force Projections: 1986 to 2000. Monthly Labor Review, (9), 1987, 19, 21-22, 24.

General Accounting Office, Comptroller General. Will There be Enough Trained Medical Personnel in Case of War. (HRD 81-67), 1981, Washington, D.C.

Green, K. What Freshmen Tell Us: Excerpts From the Transcript From the Nurses of the Future Conference. American Journal of Nursing, 87(12), 1987, 1610-1615.

Green, K. Who Wants to be a Nurse? American Demographics, 10(1), 1988, 46-48, 61.

Hackman, J.R. and Oldham, G.R. Development of the Job Diagnostic Survey. Journal of Applied Psychology, 1975, 60, 159-170.

Herzberg, F., Mausner, B., and Snyderman, B. The Motivation to Work, 2nd Edition, New York: Wiley, 1959.

Hill, Henry. Strength Accounting Branch, Directorate of Information Management, Army Reserve Personnel Center. Interview. 17 August 1988.

House, A. All About the Army Reserve. Army Reserve, 31, (1), 1985, 18-22.

Kalish, Stuart. Presentation on the image of the profession of nursing, Secretary's Commission on Nursing, Department of Health and Human Services, Washington, D.C., 1988.

Kocher, K. and Thomas, G. The Reserve Intentions of Active Duty Army Nurses. Technical Report NPS 54-88-014, Naval Postgraduate School, Monterey, CA, 1988.

Mayer, William. Testimony, Subcommittee on Defense, Committee on Appropriations, U.S. House of Representatives, 98th Congress, 1st Session, 1984.

Mica, Walter V., COL. Chief of Nursing, Silas B. Hays Army Hospital, Fort Ord, CA. Interview. 2 June 1988.

Mitchell, Fiora, LTC. Army Nurse Procurement Branch, Directorate of Officer Personnel Management, Total Army Personnel Agency, Alexandria, VA. Interview. 14 November 1988.

Mitttemeyer, B.T. Testimony, Subcommittee on Defense, Committee on Appropriations, U.S. House of Representatives, 98th Congress, 2nd Session, 1984.

Rieker, Dennis, LTC. Army Nurse Branch, Directorate of Officer Personnel Management, Total Army Personnel Agency, Alexandria, VA. Interview. 10 November 1988.

Seevers, James S. Recruiting Physicians and Nurses for the Reserve Components. Executive Research Project 1988. The Industrial College of the Armed Forces, Ft. Leslie J. McNair, Washington, D.,C.

Tauber, C. and Validisera, V. Women in the American Economy. U.S. Bureau of the Census, Current Population Reports. (pub. no. 23-146), Washington, D.C., U.S. Government Printing Office, 1986.

Texidor, Margaret, LTC. Assistant to the Chief Nurse (Research), 4010th US Army Hospital (Augm-1000B), New Orleans, LA. Interview. 18 November 1988.

U.S. Army Health Services Command. Nurse Staffing Philosophy: Information Paper. 22 March, 1988.

U.S. Department of Commerce, Bureau of the Census. Statistical Abstract of the United States, 1988.

U.S. Department of Health and Human Services, Health Resources and Services Administration, Bureau of Health Professions, Division of Nursing. The Registered Nurse Population, Findings From the National Sample Survey of Registered Nurses, November 1984. Washington, D.C., 1986.

U.S. Department of Health and Human Services, Public Health Service, Health Resources Services Administration. Fifth Report to the President and the Congress on the Status of Health Personnel in the United States, No. HRP 096804, 1986.

U.S. Department of Health and Human Services. Secretary's Commission on Nursing: Interim Report. Washington, D.C., July, 1988.

U.S. Department of Health & Human Services. The Registered Nurse Population: Findings from the National Sample Survey of Registered Nurses, November 1984, by E. B. Moses. Report No. HRP-0906938. Springfield, VA: National Technical Information Service, June 1986.

# DISTRIBUTION LIST

<u>Agency</u>	<u>No. of Copies</u>
Defense Technical Information Center Cameron Station Alexandria, VA 22314	2
Dudley Knox Library, Code 0142 Naval Postgraduate School Monterey, CA 93943-5000	2
Office of Research Administration Code 012 Naval Postgraduate School Monterey, CA 93943-5000	1
Department of Administrative Sciences Library Code 54 Naval Postgraduate School Monterey, CA 93943-5000	1
Library, Center for Naval Analyses 4401 Ford Avenue Alexandria, VA 22302-0268	1
HQ USAREC PAE-RS Bldg. 48-C Fort Sheridan, IL 60037-6000 Attn. MAJ E. Stanton	2
HQ USAREC RO-N Bldg. 48-EF Fort Sheridan, IL 60037-6000 Attn: Col. S. Christophe	2
U.S. Total Army Personnel Agency ATTN: DAPC-OPH-AN (LTC D. Clark) 200 Stovall Street, Rm. 9N47 Alexandria, VA 22332-0417	1
Asst. Prof. Thomas P. Moore, Code 54Mr Administrative Sciences Department Naval Postgraduate School Monterey, CA 93943-5000	2
Adj. Prof. Benjamin Roberts, Code 54Ro Administrative Sciences Department Naval Postgraduate School Monterey, CA 93943-5000	2
George W. Thomas, Code 54Te Associate Professor of Economics Naval Postgraduate School Monterey, CA 93943-5000	12

Kathryn Kocher, Code 54Kk Administrative Sciences Department Naval Postgraduate School Monterey, CA 93943-5000	10
H. Wallace Sinaiko, Program Director Manpower Research and Advisory Service Smithsonian Institution 801 N. Pitt Street Alexandria, VA 22314	1
Col. Harry J. Thie Office of Assistant Secretary of Defense (Manpower and Reserve Affairs) The Pentagon 2E591 Washington, DC 20310	1
Bette Mahoney Chief, Survey Division Defense Manpower Data Center 1600 N. Wilson Blvd., Suite 400 Arlington, VA 22209	1
LTC B. J. Thornburg HQ FORSCOM Attn: FCJ1-RTS Ft. McPherson, GA 30330-6000	1
Dr. Lewis Cabe Director, Manpower and Training Program Center for Naval Analyses 4401 Ford Avenue Alexandria, VA 22302-0268	1
Dr. Jules J. Borack, Code 06 Head, Testing Systems Division Navy Personnel R&D Center 271 Catalina Boulevard San Diego, CA 92152-6800	1